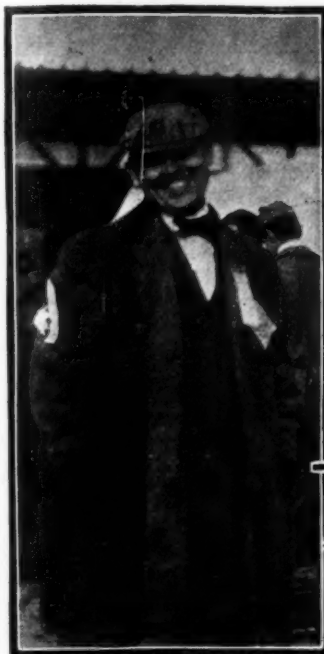


THE AUTOMOBILE



MANAGER TORDICK, PLEASED



HARRY CEDRINO AND PARKER



TANKERSHAM JR. QUIETLY PLEASED

Morris Park's Concluding 24

Marred by Fatality and Accident. Winner: Fiat of Italy.

FIAT, driven alternately by Cedrino and Parker, ran up the highest score in the second twenty-four hour race, held September 27-28, at the Morris Park track. The 984 miles to the credit of the Italian machine when Official Wagner fired the pistol shots which announced the termination of the long struggle made victory an easy one, for Studebaker was far behind, with 878 miles, and the Itala had 873. The Renault record of 1,079 miles remains unbroken, but it should be mentioned to the credit of the contestants in the last event that for six hours they had to struggle in a drenching downpour of rain, which rapidly transformed the dirt track into a quagmire. Goggles could not be worn when ploughing through the sea of mud and water, with the result that every driver on the track suffered intensely from the effects of the dirty mess thrown into his face at every turn of the wheels.

With one fatal accident to record, that of L. W. Smelser, the pilot of No. 3 Lozier, and several very narrow escapes on the

part of drivers and spectators, the question involuntarily arises: "Is the game worth while?" The man who lays down his dollar for thrills probably has no reason to grumble at his bargain, but every person with an interest in the welfare of the industry, or any knowledge of racing in its most wholesome forms, will declare unhesitatingly that, as at present conducted on improvised horse tracks, this form of contest is harmful.

There was but one absentee at the starting line when the competitors were lined up in four rows opposite the grandstands and sent away by Wagner at intervals of five seconds. The missing one was the Renault with which Paul Lacroix and Maurice Bernin established the record of 1,079 miles at the last meeting. While attempting a Chicago-New York record a few days ago, Bernin was struck by a non-skid band, which came off the tire when traveling at a rapid rate. The injury, though not of a serious nature, was exceedingly painful, causing the driver to abandon his cross-country run and withdraw his engagement





VIEW OF MORRIS PARK, TAKEN SATURDAY MORNING WHILE THE RACE WAS IN PROGRESS AND BEFORE THE ACCIDENT HAPPENED WHICH CAST A GLOOM OVER THE WHOLE AFFAIR.

in the Morris Park race. Lacroix took consolation in a challenge to the winner of the race and also to the Thomas victor of the Brighton Beach "24."

At the outset a very rapid pace was set, the Dietrich running off 52 miles; the Simplex and Lozier No. 3, 50 each, and a number having well over 40 miles to their credit at the end of the first hour. It was obvious that such a rapid rate of travel could not be maintained on the track, for although lighting was better than ever before, some oiling had been done, and a little attempt made at banking, the turns were still in bad condition. Few of the drivers appeared to have a just appreciation of the speed which they could reasonably hope to maintain during two rounds of the clock, danger-courting driving and playing to the gallery being more common than sane handling of the machines on a makeshift track. Gas lamps were used almost exclusively for both head and rear lights, consequently there were few stoppages to light up during the night. Whenever a stop was made it was always because of broken piping or rubber tubing having slipped off the metal ends. No. 6 Matheson was the first to abandon the contest, after two hours' running. The penalty for excessive speeding on turns had soon to be paid in the shape of time lost for changing tires, and business began early at the big camp installed below the stands.

One of the features of the organization of the race was the attention which had been given by nearly every entrant to the fitting up of the repair tents and providing accommodation for the helpers. The Diamond Tire Company, which supplied all the contestants but three with tires,

had a well-organized establishment in charge of G. A. Davidson. A solid wood platform gave a secure standing ground on which to work on the cars, one large tent held a quantity of tires, and smaller ones were used for lodging the workmen. Lighting, too, was satisfactory. Instead of a single tent in which men slept, ate, worked and fell over one another in busy moments, there were a number of large, well-lighted tents, with tools laid out on tables, spare parts aligned carefully, and gasoline and water cans filled and painted in such a way as to avoid confusion in the exciting moments when a car ran in for repairs. In front of the improvised workshop, too, stout floor boards had been laid down and guarded off by ropes. Smaller tents close by provided sleeping accommodation for the staff of mechanics.

The Lozier people had even gone one better with a private checking station opposite the camp, where the passage of each of the firm's cars was recorded mechanically, and where the cream-clad drivers were given their position round by round by the aid of luminous signs. At the opposite end of the line Matheson had a private signaling system to their drivers.

Vigorous efforts were made by officials, police and a squad of Pinkerton men to keep the paddock clear of idlers. With large gaps through which healthy inquisitive youths could crawl with little difficulty, the task was not always an easy one, but the routing out was zealously performed by the big stick brigade.

At the end of the third hour the two Loziers had got a good lead with 143 and 146 miles respectively, followed by Vaughan on the Stearns, with Fiat, Allen-Kingston, Darracq and Motobloc closely bunched. Smelser continued to maintain a high rate of speed, covering 44, 46, 47 and 49 miles in the hour, until the seventh, when he lost time, and Cedrino on his Fiat drew level. At the end of the ninth hour the Italian had a lead of eight miles and from this point onward continued to draw away from the crowd until the end. At the end of the sixteenth hour the Fiat had got ten miles ahead of the Renault record for that time.

How the Improvised Track Claimed Its Victim.

Near the end of the thirteenth hour L. W. Smelser, who had driven the Lozier No. 3 continuously from the start, and was then in eighth position, crashed through the barrier at the upper turn and received such injuries that he died an hour later at the Fordham Hospital. According to the Lozier people, the right front tire blew off the rim through taking the turn from the back stretch at too high a speed. It was impossible to swing the machine round with the deflated tire hanging to the wheel, and it rushed straight ahead into the barrier marking the limits of the track. The top bar of the hedge consists of a stout metal pipe used for carrying water when the course was the scene of horse racing. The car passed under this, the top of the radiator being damaged in the passage. Fred Hall, Smelser's mechanic, being rather lower than the driver, passed under this pipe and escaped injuries. Smelser either dodged too late, or was too tall to escape the pipe, for he struck it with his head and fell from the machine unconscious. Doctors on the field gave the necessary attention immediately and the unfortunate man was hurried to the hospital, where he died an hour later.

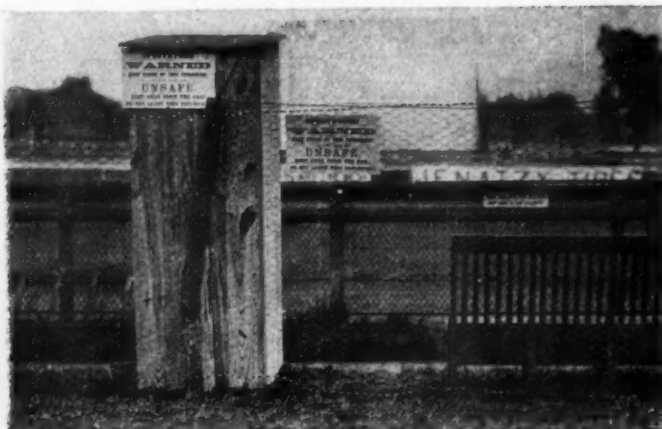
A couple of spectators, who had no business near the inner rail, were struck by the machine, and sustained injuries which fortunately were not of a very serious nature. By breaking through the barrier and running across the grass land before it pulled up, the front of the machine was considerably wrecked, but after examination of the parts the Lozier experts are emphatic in declaring that no part of the steering gear broke and that the accident can alone be attributed to the tire pulling off the rim through taking the slightly banked turn on loose earth at too high a speed.

As soon as news came that Smelser was dead, Mr. Lozier ordered the companion machine, driven by Michener, to withdraw from the contest; it was then in fifth position. L. W. Smelser was junior member in the firm of the Linkroum-Smelser Automobile Company, of Newark, N. J.



STUDEBAKER CONTESTANT WHICH FIGURED AS SECOND SURVIVOR.

Both Mathesons had gone out during the night, Nuneman's Darracq was in the paddock with a couple of cylinders taken down, the driver declaring that the clumsy mechanic had pumped air instead of oil into the engine; Mack's Dietrich, after the fastest initial round of the meet, had to be doctored at frequent



PRECAUTIONS TO KEEP ONLOOKERS OUT OF DANGER ZONE.

a remarkably lucky manner. At the time of the spill four other cars were following the Packard on the turn and for a moment there were prospects of a serious mix-up. Fortunately, however, all steered clear. Compared with the last race held on the Morris Park track, this turn appeared to be particularly bad.

MILEAGE HOUR BY HOUR IN THE SECOND MORRIS PARK 24-HOUR RACE, SEPTEMBER 27-28.

CAR	H.P.	DRIVERS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Total
1 Fiat.....	35	Cedeno-Parker.....	43	90	134	180	227	271	316	362	408	457	504	553	600	650	699	746	781	830	855	884	910	934	959	984	984
2 Studebaker..	35	Holm-Ditmar.....	43	90	133	173	214	254	284	329	369	412	458	494	537	582	623	667	710	752	772	793	819	839	861	878	878
3 Itala.....	40	Zumbach-Carriere....	43	80	118	154	198	243	279	319	355	396	432	471	508	549	586	631	672	720	739	768	796	817	845	873	873
4 Fray'r-Mill'r	50	Knepper-Webster....	44	82	126	169	207	250	293	321	368	396	421	467	501	530	574	610	649	674	678	694	712	712	736	756	756
5 Al'n-K'gst'n	30-35	Campbell.....	43	90	136	171	204	250	291	337	378	414	462	505	544	590	618	618	618	636	667	692	714	729	745	745	745
6 Stearns.....	30	Vaughan-Warren.....	41	91	143	180	216	257	296	343	390	432	443	461	482	505	556	596	632	674	691	706	706	710	729	729	729
7 Simplex.....	50	Poole-Robertson.....	50	101	122	137	175	216	252	291	315	368	391	428	469	469	480	542	585	611	628	643	661	674	696	696	696
8 Stearns.....	30	Schlipp-Heims.....	44	82	83	122	148	194	222	259	305	347	401	423	423	426	478	511	527	527	537	537	553	568	576	594	594
9 Darracq.....	40	McCulla-Griffith....	11	43	76	112	147	165	197	211	211	229	265	293	319	374	391	401	447	450	500	528	532	532	532	534	534
10 Motobloc...	30-35	Guillard-Bloch.....	43	83	129	169	176	204	243	244	250	289	289	341	357	357	375	398	439	465	468	482	482	482	482	485	485
11 Packard.....	30	Owen-Embleton.....	45	95	129	147	176	221	261	308	355	393	414	455	503	542	577	624	674	677	...	...	...	...	...	...	677
12 Lozier.....	60	Michener-Hutchinson.	47	97	143	171	194	243	294	332	365	405	451	492	531	560	574	...	...	...	...	...	...	...	...	...	574
13 Lozier.....	40	Smelser-Linkroum....	50	100	146	193	237	286	316	354	394	397	428	443	486	521	...	...	...	...	...	...	...	...	...	...	521
14 Rolls-Royce.	20	Burne-Fuller.....	44	79	113	137	183	211	252	296	315	346	346	346	346	362	393	425	464	465	468	...	...	...	...	...	468
15 Dietrich....	60	Mack-Rippengill.....	52	93	122	154	204	244	287	343	393	393	393	393	393	393	393	393	393	393	428	429	...	...	...	...	429
16 Welch.....	50	Truwin-Greenwood....	39	63	90	137	175	180	200	232	239	240	240	251	251	266	266	294	294	311	325	...	...	...	...	...	325
17 Darracq.....	40	Wallace-Nuneman....	44	91	130	168	186	221	266	303	318	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	318
18 Matheson...	60	Lescault-Buck.....	43	79	119	150	183	211	214	216	254	257	...	...	...	...	...	...	...	...	...	...	...	...	...	...	257
19 Matheson...	50	Ryall-Adams.....	37	72	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	72
Renault Record			45	92	138	179	226	271	314	360	406	453	503	552	597	646	695	736	787	826	871	909	951	995	1,032	1,079	1,079

intervals by a team of French mechanics; the Welch had furnished little since it cast a shoe and went into the inside fence. With this reduction, added to the departure of the two Loziers, the track at times had a deserted appearance during the forenoon.

Excitement was provided about 1:30 when, on rounding the turn past the grandstand, Stuart Elliott's Packard rushed into the inner fence, rolled over on its left side and threw Embleton and his mechanic on the grass. Embleton was severely bruised and cut, but, considering the nature of the accident, escaped in

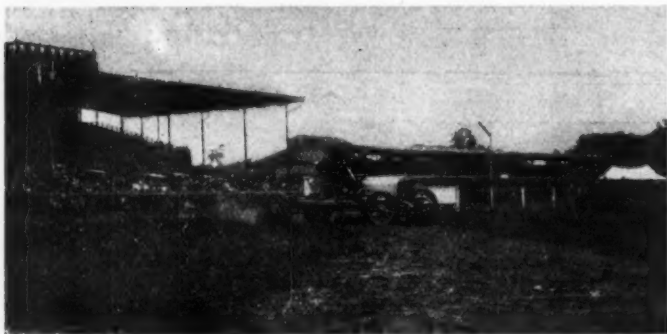
At the end of the eighteenth hour the race was called off for repairs to the track, short-distance events being held in the interval. They were of little interest, however. Rain had fallen during the interval, and soon after the re-start continued to descend in such force that an effective stop was put to fast driving. The rules of the race demanded that those machines continuing in the contest should draw up opposite the grandstand and that no work should be done on them during the interval, an official being told off to enforce the regulation. Yet at the same time



REPAIRING THE MUCH CUT-UP TRACK DURING INTERMISSION.



LIGHTING OF THE TRACK WAS EXCEPTIONALLY WELL DONE.



"WALLY" OWEN AND AMERICAN MORS CROSS-COUNTRY WINNER.



DARRACQ CONTESTANTS IN THE TAXIMETER CAB EVENT.



DIAMOND TIRE CAMP WAS A BUSY PLACE MUCH OF THE TIME.

six cars were in the paddock undergoing extensive repairs and were allowed to come to the track after the re-starting of the contest and continue with the others. Even with these two hours'

gratuitous repairs the favored ones were never in danger of capturing first place, but they certainly got a position on the finishing list they would not have had under a just enforcement of the rules.

This one-sided justice practically allowed any machine which needed to renew its parts to run into the paddock a few minutes before calling an interval, receive every attention while there, and come out to compete with others forbidden to make repairs except during running time. Mack's Dietrich, whose mileage had stood at 393 from the ninth to the eighteenth hour, came out after the interval and carried off a special prize of \$20 for the highest mileage in the nineteenth hour. After this spurt it added one more mile to its score and retired permanently.

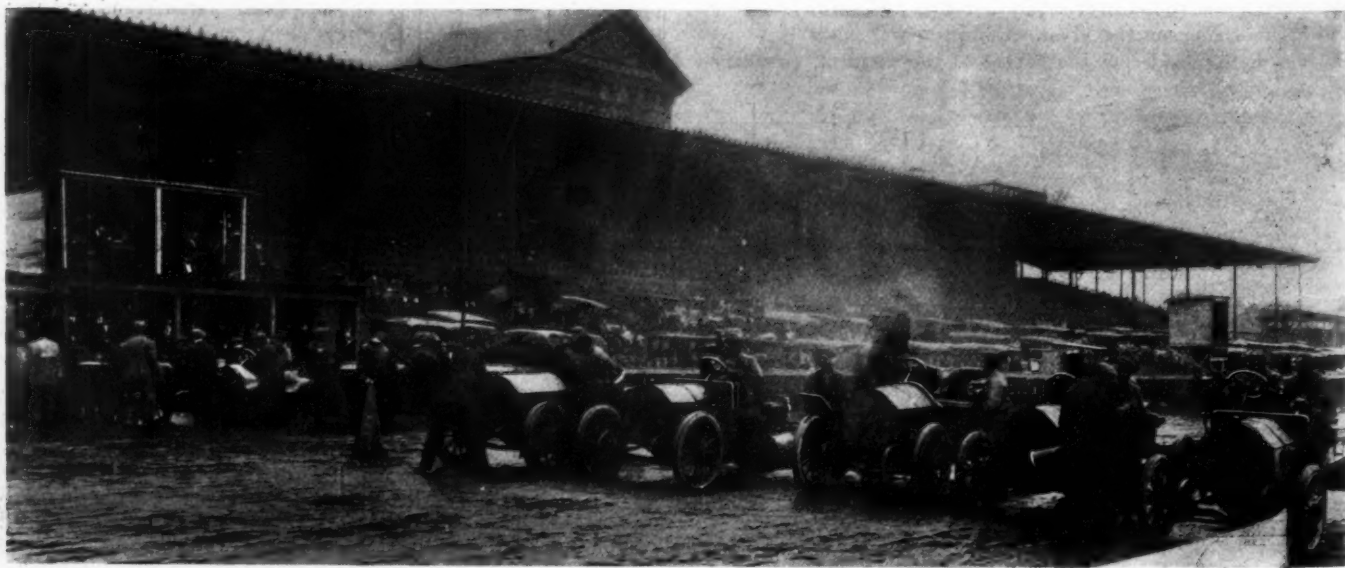
Continuous Rain Drove Spectators Home.

It was a persistent downpour which accompanied the re-starting of the struggle; a drenching rain which drove all but the most enthusiastic spectators homewards and made drivers and helpers hurry into rubber clothing, hunt round for chains, and cut down their speed by nearly one-half. There was no further doubt as to the result of the race. Fiat had a lead of 78 miles, was running with the regularity of clockwork, and had absolutely nothing to fear from any of her rivals. Cedrino, who was relieved occasionally by Parker remained the larger part of the time at the wheel, had handled the car in a masterly manner, maintaining an average of about forty-six miles an hour—which is probably all that can be got out of any car with the track in its then condition. The record of the Renault, which, like the Fiat, was kept within its limits, tends to confirm this. Instead of placing the gasoline tank at the rear, the Fiat people had hung it on the outside of the left frame, where it served to preserve the balance of the car on the bends. The Fiat was equipped with Michelin tires which gave no trouble whatever.

Most Drivers Were Cautious in the Rain.

With the rain Cedrino wisely cut his speed down to 29 miles for the first hour, then lowered it to 26 and again to 24, increasing it to 25 during the last hour. It was probably due as much to add to his own comfort as to a desire to save the machine, for a few miles an hour more on the flooded track must have added considerably to the discomfort of the drivers.

Zumbach and Carriere, who alternated at the wheel of the Itala, made prodigious efforts to get ahead of the Studebaker during the last six hours. Thirty-two miles behind on the re-commencement of the race, the distance between the Italian car and the Studebaker was gradually diminished until at the end of the race there were only five miles between the two. The



LINE UP FOR THE RE-START SATURDAY AFTERNOON; DARRACQ, FIAT, SIMPLEX, STUDEBAKER, AND ITALA.



PHOTOGRAPH TAKEN IMMEDIATELY AFTER THE PACKARD ACCIDENT, THE DRIVER OF WHICH IS BEING ATTENDED BY POLICE OFFICERS.

foreign drivers sacrificed themselves and took every chance with the machine, rounding the curves in a manner which sent a thrill through the few spectators peering at them through the blinding rain. Zumbach suffered so much from the driving mud that he had to leave the car during the last hour and call a doctor to attend to his eyes.

As soon as the competitors were stopped and drawn up at the judges' stand Cedrino made a request for his prize money, explaining that he had heard that at these events the drivers were not always paid. He was given satisfaction on the spot. The Studebaker, 106 miles behind the Fiat, secured second position, solely through regularity of running. It was not the fastest of the cars on the track, but gradually worked up from a low position to the highest but one, owing to consistent work. Frayer-Miller was declared to be suffering from carbureter troubles; certainly she never showed the speed expected of her, and during the last few hours was frequently away for long periods. Allen-Kingston had a stationary mileage for four hours, but did not take the unfair advantage of remaining in the paddock during closed time. There were three hours during which Vaughan's Stearns remained stationary, while Schlipp's Stearns had no better record. Poole and Robertson on the Simplex were kept down considerably by tire trouble. The Darracq driven by McCulla practically retired at the twentieth hour, then added one mile to its score during the last few minutes of the race. Motobloc suffered from radiator troubles, had no staff to attend to the car when it put into port, and finally wasted a lot of time fitting mud guards.

Record Trials and Various Short Races.

During the afternoon interval an uninteresting race was held over twenty laps of the cross-country course inside the track, the competitors being Wallace Owen in an American Mors, Ned Crane in an English Daimler, and Arthur Rowley in a Dietrich. The Mors won. Robertson drove the big Vanderbilt cup Hotchkiss racer round the course a couple of times, then decided that it would be folly to attempt records with the track in its condition. Nuneman, on the Darracq with which Hémyer won the Vanderbilt Cup, had no such scruples, and after a few practice spins made a trial against time, result being 0:58 for the mile.

Robertson made an attempt to lower the mile record on the Friday afternoon preceding the big race. He drove the Hotchkiss Vanderbilt Cup racer, and was clocked in 52 seconds, lowering the gasoline mark for Morris Park. A three laps race, about 4.17 miles, for four-cylinder Ford runabouts, was won by Frank Dunnell, Walter Livingston second, and E. Rogers Stearns third.

Wallace Owen won the 10-mile road race over the cross-country course with an American Mors; Ned Crane was second in the English Daimler, and Charles Trewin third on a Welch.

Seven of the new Darracq taximeter cabs lined up in a race which was won by Stephen Brown. No time was taken.

The twenty-five mile race open to stock cars of 60-horsepower or less was won by Guy Vaughan driving a Stearns, time 27:54 1-5; George Fentie on a Packard was second in 28:39.



SMELSER, THE UNFORTUNATE, AND HIS LOZIER CRAFT



WHERE THE POWERFUL CAR SMASHED THROUGH THE FENCE.



CAR STOPPED IN THE FIELD, STRANGELY REMAINING UPRIGHT.

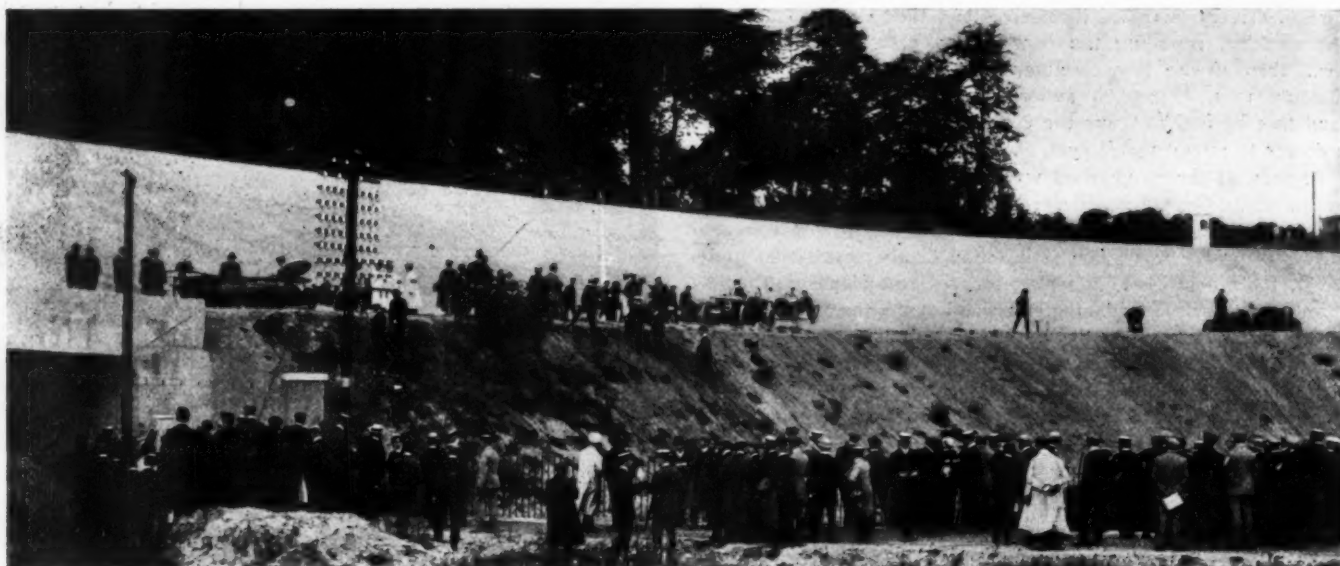
BROOKLANDS TRACK HAS ITS FIRST FATALITY

LONDON, Sept. 23.—Brooklands track, the only one of its kind in the world, and specially built for safe racing at speeds up to 150 miles an hour, has proved that it has elements of grave danger. At the fourth meeting Mr. Herman, a member of a London firm of automobile dealers, met his death while driving the Minerva car with which Moore-Brabazon was victorious in the recent Ardennes circuit race under German Emperor rules. The sixth race had come to an end with the Minerva machine in about sixth position on the straightaway finish. It is not always possible to pull up on the straight, and Herman ran onto the banked portion, as is very frequently done. Probably owing to inexperience, for it was his first race on the track, he ran too far up the bank. It would have been possible to gradually drop down to the inside of the track, but the sight of the steep slope probably unnerved the driver and he gave a wrong turn of the steering wheel. Both rear wheels collapsed

seventeen competitors into line on the track at their proper distances and instruct them on the method of starting, a delay which did not please the public. As a signal to start the engines a rocket was fired, and three minutes later another rocket shot into the air to indicate the start of the race. In another handicap race three Mercedes machines were placed nearly a quarter of a mile away from the Napier on the scratch and the starter waved his flag in such a half-hearted manner that, although one of the cars shot away quickly, the scratch man had to be signaled by the starter to come along. As a first attempt, however, the handicapping arrangements were satisfactory.

All races were for distances not exceeding five miles, experience having shown that above this distance public interest wanes owing to the cars becoming widely spaced.

In a 2 1-2 mile race for cars of 26 horsepower, 2,000 pounds weight, H. E. Hall's Germain won by 100 yards over an Arrol



MOORE BRABAZON'S MINERVA AFTER IT HAD ROLLED FROM THE TOP OF HIGH BANKING TO INSIDE OF TRACK.

and the car began to roll down the steep bank. The mechanic was thrown free of the car, but the driver, unable to extricate himself, was rolled over and over with the machine until it came to a stop at the bottom of the bank on the inside of the track, with its wheels in the air. On one previous occasion a car went over the edge of the high banking, fortunately without any ill effects. The driver on that occasion steered it right off the cement to the outside earth banking, and allowed it to slide down until the outside railings brought it to a stop.

Novel Features in Handicaps in Numbering.

Attendance was still rather meager, notwithstanding a reduction in price of admission and further improvements in holding the races and arranging for the comfort of spectators. Sport was excellent, the meeting from the automobilist's point of view being the best yet held on the track. Instead of racing colors, as used at previous meets, each car was equipped with one of the new number plates, consisting of a flat metal disc carried in brackets behind the driver. By this means it was possible to distinguish the cars at any part of the track, and there is absolutely no increased wind resistance by the use of the plate.

For the first time, too, handicapping was employed by spacing the cars at the start. Throughout the season data had been collected on the performance of the different cars, and this, together with the known horsepower, allowed a very fair handicap to be arranged. It required about half an hour to get the

Johnston, at an average of 53.5 miles an hour. There were nine starters, among them being a Cadillac and two Berliets.

The 2 1-8 mile race for 40-horsepower cars, weighing 2,500 pounds, resulted in a victory for H. C. Tryon on a Napier at an average of 68.25 miles an hour. Clifford-Earp on an Iris was second and Huntley Walker on Darracq third.

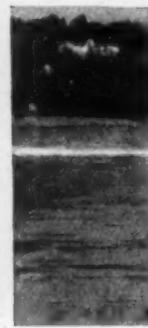
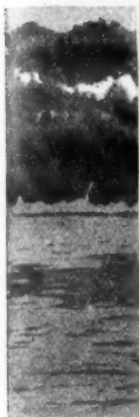
A splendid race was witnessed in the five-mile contest for 90-horsepower cars weighing 3,000 pounds, which united one 1907 and two 1906 Grand Prix Mercedes and one Darracq. The 1907 Mercedes was similar to those of the previous year, with the exception that it ran at 1,500 revolutions to 1,200 revolutions of the earlier models. Drabble's Mercedes was first, at a speed of 92.5 miles an hour; Hutton's Mercedes second, and Resta on the same make of machine, third. Warwick Wright, last on the Darracq, ran at more than 90 miles an hour. Hutton's Mercedes was hardly recognizable as a German machine by reason of an extemporized cone shaped water tank in front, which gave the vehicle the appearance of a projectile.

Newton, driving S. F. Edge's Napier, won the five-mile handicap sweepstakes at a speed of 63.25 miles an hour in a field of seventeen starters. Napier came second and Darracq third.

Napier won first and second in the 60-horsepower 3 1-4 mile race for machines weighing 2,700 pounds. It was in this event that Moore-Brabazon's Minerva was wrecked.

Mercedes got first and second position in the 3 1-4 miles handicap for high-powered cars weighing 2,700 pounds.

The Motor Boat Champions of America



"XPDNC," LEADING "SKEDADDLE" IN THE THIRTY-MILE NATIONAL CUP EVENT IN THE THIRD DAY'S RACING.

STORM and fog enshrouded the Hudson when the start was given on September 23 for the first race in connection with the annual race week carnival of the Motor Boat Club of America. The opening day's reliability trial united eight of the sixteen crafts originally entered, all of which, with one exception, succeeded in making the eight circuits of the course. Charles J. Swain's *Sparrow*, after making the fastest round, was forced to retire with its gasoline exhausted. *Speedway*, which covered nine rounds, was second fastest, and *Durno* third in point of speed. Position, however, was determined on a point system considering regularity of running, fuel and oil consumption, and similar attributes of an effective motor boat.

A stiff southeast wind was blowing up the river when *Skedaddle*, *Irene*, *Den* and *Dixie* united at the boathouse at the foot of 108th street on the second day for the 30-nautical-mile trials for the American championship. It was an unsatisfactory contest, for on the first round E. J. Schroeder's *Dixie*, victorious quite recently in the Harmsworth Cup Contest in England, was obliged to retire owing to engine trouble; *Den* went out on the second round and *Irene* on the third. H. H. Baruch's *Skedaddle*, much buffeted by the heavy seas and at one time in danger of being destroyed by fire, continued to the end, its time for the 30 nautical miles being 1:52:46. Fastest time was 24:40 miles an hour.

Joseph H. Hoadley's *Den* made the fastest time on the third day, when, in the first of the series of three races for the International Cup, she covered 30 nautical miles in 1:15:52. *Dixie*, the only other contestant in this event, disappointed her admirers by a retirement with carbureter troubles.

H. N. Baruch's *Skedaddle*, Jacob Siegel's *XPDNC*, and C. L. Seabury's *Speedway* started in the 30-nautical-mile race for the National Cup, held by *Skedaddle*. *XPDNC*, starting scratch, finished in 1:20:01, corrected time, *Skedaddle* being second, and *Speedway* third.

The Inter-State Cup, with its eleven starters, was the biggest event of the day.

C. J. Swain's *Sparrow* made the best time—1:40:53; *Meteor* was second; *Durno II*, third; *Speedway, Jr.*, fourth; *Artful* did not finish; *White Fox II* and *Flip* were disabled.

Wanderlust won the Motor Yacht Championship of twenty miles, with *Mao II* second, and *Marie* not finishing. *Ailsa Craig* secured an early victory over her only rival, *Iris*, in the Cabin Launch championship.

On the fourth day *Dixie* entirely disappeared from the motor boat carnival with a cracked cylinder, leaving *Irene* to run off the second match for the International Cup, her time for which was 1:15:07. *Skedaddle* got first place in the National Cup race, with *XPDNC* second and *Speedway* unable to finish. In the Inter-State Cup contest honor fell to *Sparrow*, with 1:32:53 for the 30 nautical miles.

Dixie being out of commission, *Irene* had no difficulty in capturing the International Cup Championship. Her time in the third match, run on the fifth day, was 1:15:56, against 1:19:47 for *Den*. The latter boat took the honors, however, in the mile championship flying start. *Den* and *Skedaddle* were the only contestants, the former averaging 25.622 knots an hour, equal to 29.504, and *Skedaddle* making 23.334 knots, or 26.1 miles. Six trials were run, three being with and three against the tide.

For the National Championship of 30 nautical miles, H. N. Baruch's *Skedaddle* and C. J. Siegel's *XPDNC* competed, the former finishing in 1:13:22 and the latter in 1:19:57. *Skedaddle* thus winning two out of three matches, secured possession of the trophy. *Sparrow* was fastest in the Inter-State championship, defeating *Artful* and *Oriole*.

Den and *Skedaddle* finished an excellent race on the sixth day in the 116.3-nautical-mile contest from 108th street to Poughkeepsie and back. *Den* covered the distance at an average of 22.77 knots an hour, *Skedaddle* coming home just 59 seconds behind her. When time allowance has been made for the difference in rating between the two crafts, the probabilities are that *Skedaddle*



"IRENE," WHICH WON THE INTERNATIONAL CUP CHAMPIONSHIP.



"SKEDADDLE," WHICH WON TWO OF THE THREE THIRTY-MILE HEATS FOR THE NATIONAL CUP AND THE RACE.

will take first place. Though four other boats were in the contest, they never at any time troubled the leaders. *Speedway* broke down going up stream, while *Durno II*, *Sparrow* and *Fairbanks II* remained a considerable distance in the rear.

Cruisers had their long race to Peekskill and back, a distance of 75 miles. The fourteen starters made a pretty spectacle as they started out from the clubhouse at 8:45 A.M. on a more promising morning than any of the previous ones. At Tarrytown *Marie* dropped out of the race with overheated bearings; *Beldame* gave up about the same point, and *Pirate* seems to have sneaked from the scene. When *Grayling*, the largest boat, reached Peekskill the club officials had not arrived to set the stake boat. After cruising round the spot where that craft should have been the *Grayling* headed for home, her elapsed time being 4:22:00. On corrected times the positions were: *Idler*, 3:36:50; *Prodigy*, 4:37:28; *Osprey II*, 4:11:34; *Speedway, Jr.*, 4:46:00.

During the running of the long race *Irene* made attempts on the measured mile and succeeded in breaking the American record for that distance. Three runs were made with and three

against the tide, the best runs being at the rate of 25.904 knots, equal to 29.828 miles an hour. The *Standard's* best performance last year was at the rate of 29.172 miles an hour, and the *Den's* best time on Friday, 29.504 miles an hour.

ANOTHER PROPOSED LONG ISLAND COURSE.

According to daily newspaper reports, a syndicate of New York, Philadelphia and Boston capitalists have secured 100 acres of land at Westbury, Long Island, and propose to construct an automobile race course thereon, solely for the purpose of racing and demonstrating cars. The tract is known as the Homestead farm and is said to be admirably adapted to the purpose.

NEW YORK REGISTRATIONS INCREASE.

Up to the evening of September 29, the registrations of automobiles at Albany had reached a total of 907 for that month, so that with the one day missing it is safe to say the increase will be more than 200 cars over September, 1906.



THE "DEN," WHICH WON THE MILE CHAMPIONSHIP FLYING START, AND LED IN THE RACE TO POUGHKEEPSIE AND BACK.

THE CARBURETER AND ITS FUNCTIONS*

By CHARLES E. DURYEA.

THE carbureter is the lungs of the engine, and large power, long service and efficient action depend upon this device. Many varieties have been offered, and the road to the patent office is busier to-day than ever with people who think they have carbureters superior to former designs. With a fixed gas no carbureter is necessary, but air and gas adjustably proportioned are permitted to mix on their way to the cylinder with good results. The earlier inventors generally attempted to provide the gas by drawing air in some manner through a tank containing gasoline, which permitted the air to absorb gasoline vapor and issue from the tank practically saturated with vapor. This over rich mixture was then diluted by the admission of air to form the proper mixture. In one form wicks of cotton, or even excelsior, served to distribute the vapor through the air. In another form the air was drawn down into the liquid and, bubbling up through it, became saturated. Other inventors seeking simplicity admitted the gasoline directly into the air passage, trusting that it would be sprayed or vaporized and mixed with the air before the end of the compression stroke. Still others provided a spray nozzle, past which the air is drawn with sufficient velocity to break the liquid into a spray. This form is now in almost general use to the exclusion of other forms. Each is usually called a carbureter, but properly the gas tanks only are entitled to this name, and the present form is more appropriately an atomizer, or, since its essential service is to mix liquid fuel and air to form what is universally called a "mixture," I prefer the short, simple, expressive word, *mixer*.

Some Facts That Should Be Borne in Mind.

A number of facts concerning gasoline engines must be kept in mind when considering the mixing device if the engine is to give superior results:

First, the mixer must perform its function to the fullest possible extent and intimately mix the air and liquid. It is not enough that it should provide a proper mixture at high speed only, for, although this will cause the engine to show a high power, it will not give smooth running or great power at slow speeds. If the mixture is not intimately mixed, some parts are too poor to burn, others burn slowly because lean, while other parts are too fat to burn, or burn very slowly because overfat. The result is little power, a hot engine, much deposit of soot and an ill-smelling exhaust that is distinguishable at a distance.

Second, in order to have full power and give the best results the liquid fuel must be properly proportioned to the air. Too much or too little liquid produces slow-burning mixtures and undesirable results. Further, although during each cycle the engine may receive the proper amount of air and liquid for the perfect mixture, if the early portion is air and the latter portion largely liquid, it is quite evident that a homogenous mixture will not be produced and that proper ignition with perfect engine behavior cannot follow. It is therefore necessary that the air and liquid be proportioned constantly in a proper manner, and this may be rightly termed the second great requirement.

Third, it is also evident that different sized engines will have different requirements, and that a mixing device suited to one may not be suitable when fitted to another. The same is true in connection with speed. A proper mixture at one speed may be completely thrown out of proportion, or may be improperly mixed at another speed. Engines nowadays run at rotative speeds from 200 to 2,000, and the perfect mixer must meet these requirements. Since at high speeds full charges are usually used, while at the low speeds the throttle reduces the charge admitted, it is quite evident that the service required of a mixing device is

not adequately represented by the proportion 10 to 1, but that it is probably more nearly 20 to 1, and possibly may vary as much as 50 to 1. Such wide variation increases the difficulty of maintaining proper proportions and making a perfect mixture, and renders it necessary that the mixer should automatically adjust itself to the varying requirements.

Where Past Carbureter Construction Was Faulty.

These three features are the basic ones which must be kept in mind while considering the minor but important points of the perfect mixer. Most mixing devices heretofore constructed have aimed to provide for these three points, but more often than not each provision has been an imperfect one and the results not of superior quality. The typical mixer of to-day takes air from the atmosphere at practically constant pressure, and liquid from a float chamber presumably having a constant level. Since, however, the quantity of air required is about fifteen hundred times greater in volume than of the liquid, and since the speed under a given suction is much greater than the speed of the liquid, it will be seen that wide opportunity for improper proportion exists. Add to this the facts that at very slow speeds the liquid may not be sprayed, but may be simply drawn from its nozzle in large drops, or even in a stream running down the outer walls of the nozzle, while at very high speeds the air inlet may be too small to admit a sufficient quantity of air, and the difficulty of maintaining a proper proportion under such wide variation will become apparent. To meet this difficulty the perfect mixer must automatically enlarge the supply of air and vary the liquid to maintain it proportionate to the air as the needs of the engine grow greater. To do this with certainty it should have a diaphragm acted upon by the suction of the engine, which diaphragm should be large enough to respond to slight variations, and thus prevent high vacuums, with consequent reduced power at high speeds. This method of providing for wide range is the only correct method. The mere opening of the usual auxiliary air port cannot perform this service, for the suction must increase considerably before the air port will open, and there is seldom or never provision made for securing either intimate mixture or proper admission of proportionate amounts of air and liquid with this auxiliary device.

This necessary automatic adjustment should not only be operated by the suction, but it should be sensitive enough to prevent much variation in vacuum between high and low speeds, and the mixer at high speeds should have openings large enough to admit the fullest possible charges, while at low speeds the opening should be so small as to secure sufficient air velocity to make a perfect mixture, that is, a fine spray of the liquid properly proportioned and intimately mixed, even when turning the engine over by hand. This can only be attained by permitting a large diaphragm to vary the size of the passage or passages under increased suction, and consequently proportionate to the speed.

Perfect Balance of the Float Is Necessary.

The float chamber should be concentric with the liquid inlet, so that inclination in any direction will not cause more or less liquid to be admitted. The float should be surrounded by a substantially concentric volume of liquid that will support and balance the float, with the result that sudden vertical movements, such as jolts, are without effect. This arrangement is superior to floats balanced by weights, in addition to the column of liquid, for, owing to their different densities, the liquid and the weight may interfere in their duties and destroy the perfect balance sought for. The float should be a single piece preferably without working joints, and particularly without frictional contacts with levers, which may sooner or later wear through its thin metal

*Paper read before the Society of Automobile Engineers, Buffalo, N. Y., July, 1907.

and cause it to leak. The float should be constant in weight and buoyancy, and is therefore preferably of metal, since few cork floats can be depended upon to remain impervious to gasoline and retain their buoyancy. The float point should be adjustable, so that the level of the liquid may be maintained at the most advantageous point to suit the vacuum necessary to make the proper spray, and also to overcome the effect of different heads of gasoline which may be used. It should be quite evident that the mixer, giving excellent satisfaction when attached to the bottom of a tank three or four inches deep, may fail when piped to a tank several feet deep in the bow of the boat, which in rough weather may rise several feet above the level of the mixer. The float point may be of such taper and size as to in some degree vary the gasoline level in action, giving a higher level and better mixture at slow speeds.

The float point should be easily ground so that it may be kept tight and in perfect working order. Further, the motion of the vehicle should tend to move the float point to some degree, even though slight, which movement serves to force away any particles of dirt that may lodge on the point during the passage of liquid. On this account it is best if the float and point are fixed one to the other so that the point partakes of the motion of the float and liquid in the chamber. The gasoline should enter the float chamber from a single direction, either up or down, so that no pockets exist in which water or dirt may gather. It is best to feed the chamber by gravity from a tank above the float chamber and with downwardly extending pipe, without pockets, leading into the chamber near the top, with float point upward, such point being attached directly to the float without levers, weights or other unnecessary parts. The float chamber should open at the bottom for automobile use. This facilitates removal of any water, ice or dirt, and removal of float itself, without opening the top and permitting dirt to fall in from above. The float and removable bottom can be replaced with a stream of gasoline flowing upon them, which will wash away particles of dirt, if any accidentally get on the parts while being replaced. With top opening, ice in the bottom of the chamber may not only support the float and prevent its falling to admit gasoline, but may also bind the float so firmly that it cannot be removed to permit removal of ice, which may prove an unpleasant predicament if away from means of warming the mixer. The float chamber should have an air vent to permit proper action, and this vent should preferably terminate above the gasoline tank, so that if for any reason the float fails in its duty the gasoline rising in the vent tube will not rise higher than the tank level, and so cannot escape. Where convenient, the tickler, or device for depressing the float and flooding the mixer, should pass down this vent tube. This arrangement, in connection with a needle that closes the nozzle when the motor is stopped, prevents danger from leaking gasoline and possibly fire. It is more reliable than a stopcock, for the operator will grow careless about the stopcock, but will, if needed, adjust the nozzle daily to secure best results under prevailing weather conditions for that day.

Equalization of Fuel Flow into the Mixer.

All gasoline entering the mixer should be strained through ample gauze, so that particles likely to clog the nozzle may be kept from entering. Such gauzes are usually provided at the opening of the tank or in the funnel; but this is not sufficiently certain for the best results and the perfect mixer should be self-protected from this certain cause of trouble.

The outlet from the float chamber, usually termed the nozzle, should be nearly concentric with the chamber. If centrally located, variations in angle do not affect the level at this point; but it is some advantage to have this point slightly behind the center, so that going up hill or accelerating the action of the vehicle automatically raises the level of the liquid and thus slightly increases the flow, making the mixture slightly more fat and powerful. This arrangement permits the normal mixture to be lean, insures perfect combustion, great economy, and no odor, yet

automatically brings the mixture to maximum fatness and power when power is needed.

Since liquid has considerable weight, and consequent inertia, the passage to the nozzle should be both short and large, for large passages do not clog easily and, if short, the liquid can flow quickly and will likewise cause flowing without delay when the suction ceases. If large, the friction is less and no particle of liquid need acquire high momentum. If, on the other hand, this passage is long, the liquid does not get started until a large volume of air has passed the nozzle, making the early part of the charge too lean, while, as the suction decreases and the air flow ceases, the inertia of the liquid causes it to continue to flow, making the latter portion of the charge overfat, and leaves between charges probably unsprayed drops of liquid, which fall upon the walls or are drawn into the motor.

Unsprayed Liquid Should Not Be Allowed to Waste.

Such liquid as remains in the passage unsprayed should be retained, and not permitted to run into the motor or upon the ground. This liquid should also, by the shape of the passage or by other suitable means provided, be broken up, sprayed or finally divided at the next suction stroke, so that it may properly serve its purpose within the engine. If, because of a faulty float, the nozzle should flood, the air passage should not fill with gasoline, for, when attempting to start the engine, this would result in a large volume of liquid being drawn into the cylinder, making its contents too fat to ignite. To prevent such flooding, the air passage should have an opening at a proper distance above the bottom to permit the escape of excess liquid, in case such exists.

The nozzle should be closed from above by an adjustable needle, for the inverted conical point of such a needle assists in making a fine spray. This needle-adjusting handle should terminate near the operator and permit him, while operating the vehicle, to vary the proportion of the mixture, and thus secure the greatest power by trial, as well as accommodate the device to the temperature and humidity of different days, and also to the gravity and composition of different fuels. No adjustment while the vehicle is standing can compare with adjustments in actual road service in point of accuracy. Further, the mixer should be adjustable at low speeds, to secure certain ignition and steady running. Gas engines are particularly prone to misfire at their limits, and the perfect mixing device for automobiles will provide superior conditions at these limits in order to secure the most satisfactory range of service. This necessitates provision also for adjustment at normal or high speeds, and by inference the device should automatically compensate at intermediate speeds. Most present-day devices are adjustable for one speed only, and depend for automatic adjustment upon considerable variation in the suction vacuum, and so cannot give good results at widely varied speeds from that to which they are adjusted. This defect need not, and most certainly should not, exist.

That the largest possible charges may be drawn into the motor at high speeds, it is self-evident no needless friction should be caused the air as it passes toward the engine. On this account a single air passage is better than several, because there is less wall surface and friction. It is also evident that the air passage should be easy, and not tortuous or broken. It is undoubtedly true that the tortuous passage will break up the particles of gasoline and help to form a homogeneous mixture, but this is done at the cost of increased suction and of some loss of volume and consequent needless loss of power from the motor, particularly at high speed.

Protective Gauzes and Their Frequent Cleansing.

Since some engines may occasionally backfire through their inlet valves, the mixer should be provided with escape for explosion, for if this is not done the pressure may force into the float chamber and will more certainly interfere with the next succeeding charges than if allowed to escape into the atmosphere freely and promptly. To prevent such explosions from igniting anything on the outside, the pipe entrance should be provided with a gauze

strainer, which mainly serves to keep out particles of dirt that otherwise would enter the engine and likely stick to the walls and cause rapid wear and pre-ignition. Much of the carbon deposit so common in automobile engines is caused by road dust, with enough oil to bind it together.

The rapid evaporation of the liquid not only takes heat from the passages in which the evaporation takes place, but frequently causes a deposit of moisture, which in the presence of low atmospheric temperature becomes ice and clogs the passage. This freezing may be prevented and a more perfect evaporation, with consequent intimate mixture, secured by heating the passage where the mixture is taking place. I therefore favor a heater jack outside the mixture passage, through which hot gas from the exhaust or hot water from the circulating system may flow, and I consider it advisable to place within the mixture passage at this point one or more gauzes of large area to positively intercept large particles of liquid and prevent their being carried into the cylinder. All gauzes should be removable for cleaning purposes, and frequent attention to the various details of this most necessary part of the vehicle is necessary to insure perfect work.

Present-day Faults of the Mixing Valve Summed Up.

We may get a better understanding of the features necessary in a perfect mixer by considering a typical present-day carbureter. This consists of a float chamber, usually at one side of the air passage and with a long, small nozzle for gasoline reaching into the air passage, which at this point is strangled or contracted to increase the velocity of the air past the nozzle. Between the nozzle and the engine an auxiliary opening is provided, closed by a spring valve, which, when the suction is increased sufficiently, opens more or less, admitting a quantity of pure air with which to dilute the overrich mixture coming from the strangled passage. The action of this device is about as follows: At extremely slow engine speeds, say under 200, the mixture is imperfect because the air passage is not small enough to give proper air velocity for a suitable spray. This is one of the reasons why the gas engine is regarded as inflexible, and why many engines fail to develop power as soon as their speeds are reduced. If this passage is small enough for perfect running at very slow engine speeds, say 50 and 100 with throttle practically closed, it is too small to admit a practical amount of air at higher speeds, so the gasoline by itself, or badly mixed with air, is drawn from this passage, while the greater portion of air, with imperfect provision for mixing, enters at the auxiliary valve. Clearly this cannot give a proper mixture or proper proportion. Next it must be remembered that, while the strangled passage is constantly open, the auxiliary passage is closed except when sucked open. Further, the auxiliary valve flutters, and the result may often be that in the early part of a stroke the mixture is exceedingly rich, because it all comes from the strangled passage, while later, the auxiliary having been sucked open, a large quantity of air enters (larger than necessary), with resultant poor mixture, followed by closing of the valve as the suction decreases near the end of the stroke, with consequent rich mixture at this time. Add to this the fact that with a long, slim nozzle the gasoline will continue to flow for some time after the suction stops, because of its momentum, and it will be seen that the beginning and end of each charge are probably overfat, while the center of the charge is very lean.

Wide Range of Suction One of the Difficult Problems.

There is also a wide range of suction, because at the beginning and end of the stroke there is little or no vacuum and the strangled tube offers a free passage, while at the center of the stroke there must be, and is, enough vacuum to open the auxiliary; so it is quite evident that the engine is not drawing uniformly and is not free from that negative pressure or vacuum necessary to get the largest charges and to avoid needless loss of power. The ideal carbureter will avoid this irregularity by opening a passage proportionate to the amount of mixture required, and it will not only open the air passage, but it will adjust the gasoline to suit. If, for

example, a piston or diaphragm is provided, operated by the suction of the engine in one direction and by gravity in the other, with a dash pot so that it cannot flutter, it may be made to open the air passage and to adjust the gasoline so that with little or no increase of suction the proper amount of air and liquid is admitted. With such arrangement the vacuum need only be sufficient to give the air the necessary velocity required to make a proper spray, and higher speeds will not starve the engine because of higher vacuum. The dash pot insures average openings, so that at the beginning and end of the stroke the velocity will be low, at the middle high, but with an average somewhat higher than the least practical velocity, while good results will be obtained even during the slow portions of the stroke.

Ideal Carbureter Should Have Fully Four Adjustments.

Many typical carbureters have quite abrupt corners. This decreases the amount of air that can enter, and thus impairs the efficiency. Some provide for complete vaporization within the carbureter, or very close thereto, with the result that in wet weather the moisture of the atmosphere is condensed, and in cold weather frozen, thus choking the device with ice. It is better practice to carry the spray some distance and thus distribute this refrigerating effect, with less likelihood of ice formation.

The typical carbureter has but a single adjustment for the gasoline. It is argued that the gasoline may be adjusted for low speeds when the auxiliary air valve is shut, but this very frequently does not give the proper quantity of gasoline for high speeds, so it usually becomes necessary to adjust by gases, and after a trial adjust again, until that adjustment which gives fairly good results at high speeds and permits getting along at low speeds is found. That this is not ideal is readily seen. The ideal method would vary the air passage so as to supply the requisite amount of air with the least possible variation in vacuum, and would also vary the amount of gasoline to suit this amount of air. The ideal mixer should be adjustable at low speeds for starting or running the engine idle, and it should also be adjustable at maximum or normal speeds, so that the best possible condition can be had at this time. It should automatically vary this normal or running gasoline adjustment as the proportion of air is varied. In short, it should not have less than four adjustments, two of which (i.e., gasoline and air) are automatic, and two of which are manually operated, as indicated by the behavior of the motor. The typical mixer has but half this number, and these badly deranged. The writer patented, more than a half-dozen years ago, the first automatic air inlet applied to automobile carbureters, but because of the defects of this method did not use it to any great extent, although by careful adjustment of the auxiliary valve springs it may be made to serve better than most carbureters will serve without this auxiliary valve.

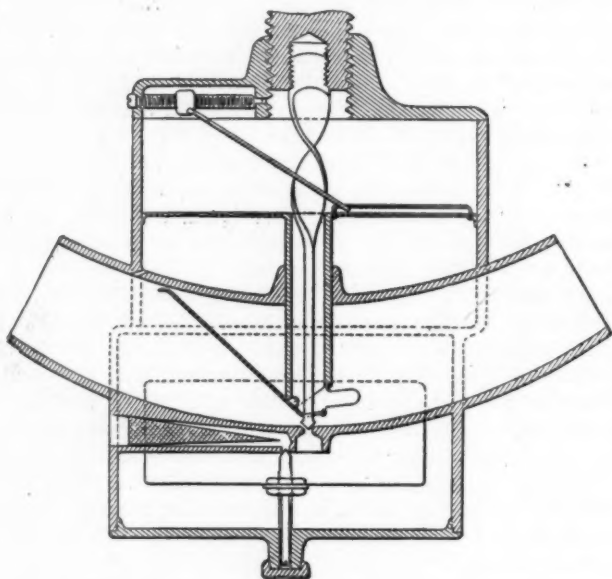
Some Conclusions Regarding the Perfect Mixer.

In conclusion, the requirements of the perfect mixer may be summed up as follows: It must intimately mix, properly proportion and satisfactorily adjust, and also have the following specifications: Float chamber concentric with inlet and nearly concentric with outlet; float of metal with point adjustable to different heads, different liquids and different weights of float; float point easily ground, and moved by any motion of the float; the float should be free from balance-weights or levers; the mixer should be adjustable by the operator while driving; it should have adjustments for very low speeds and also for normal or high speeds, and should automatically adjust between these speeds; it should have a short gasoline passage for quick action, and a large gasoline passage to prevent clogging or ramming; it should retain in the air passage unsprayed liquid, but have provision to let out any excess. A gauze strainer at the gasoline inlet and also at the air inlet are strongly advised. The gasoline should flow in a single direction, either up or down, to the float chamber from the tank. The float chamber must have vent at the top, which should, if possible, open higher than the tank; it should have re-

movable bottom and a means for daily use to shut off the gasoline. The air passage should be easy and single, rather than multiple, and have a removable gauze to prevent unsprayed liquid reaching the engine. This passage should be adjustable to the engine speed by the amount of suction, and should open freely in a reverse direction to permit back explosion to escape. A dash pot must prevent fluttering with change of opening, so that the suction vacuum is closely constant. Provision for heating is necessary in cold weather or with low gravity liquids. A mixing device which meets these requirements leaves little room for improvement.

Characteristics of the Duryea Carbureter.

The Duryea mixer has been designed after a very long experience with stationary, automobile and marine engines of all varieties. As shown in the sectional sketch herewith, it has an air passage nearly horizontal, curved easily, and provided at its for-



CROSS-SECTION VIEW OF THE DURYEA CARBURETER.

ward end with gauze screen to exclude dirt. At the opposite end a disk or other throttle is provided, while midway is located the gasoline inlet, with adjusting needle and an adjustable air gate, spring mounted, so that it may open freely to let out any explosions or back pressure from the engine, but which ordinarily remains closed and causes the major portion of the air to pass under its lower end and intimately mix with the gasoline. The air passage is of necessity rectangular at the portion where the air gate is placed. This air gate is carried by a diaphragm and regulated by the suction of the engine, which withdraws the air from above the diaphragm, raising it and the gate support. This diaphragm is large, so a very slight variation in the amount of suction suffices to change the area of the air inlet. The gasoline passage is extremely short, with level adjustable by the float needle, so that the gasoline can be drawn with very slight suction, which also contributes to full charges and large power. The float and its conical point act as one piece without pivots, levers or weights, but capable of a slight twisting motion, which twisting permits the point to grind itself upon its seat and thus remain tight and clean. The gasoline inlet is protected by a gauze cone, which catches any dirt from the pipes or tank, and which is removed readily for cleaning. The float chamber is closed at the bottom by a cap, screw-threaded, and with a lead gasket, making it absolutely tight. The float needle is adjustable without removing the float or this main cap, by unscrewing a smaller cap and reaching the needle stem with a small screwdriver, the slight leak of gasoline doing no harm. The gasoline-adjusting needle is adjusted by a differential screw on top of the mixer, which may be provided

with a stem carried to a point on the dash or elsewhere accessible by the operator while driving the vehicle. This enables the mixer to be adjusted at any time in order to secure the best results. Ordinarily the screw is set to secure easy starting and certain running at very low speeds. The needle is spirally flattened, forming a sort of screw which passes through a long slot in a radius bar, pivoted at one end to an adjustable nut in the cover and at the other end sliding in a radial slot in the diaphragm.

This arrangement causes the needle to be partly revolved as the diaphragm rises or falls, thus varying its adjustment; and the amount of this adjustment may be greater or less, as the radius bar is, by its nut and screw, caused to be farther from or nearer to the needle. This radius bar is adjusted for nominal or high speeds, as may be desired, and the adjustment is found by trial, either by adjusting the differential screw to produce the desired result, and then changing the radius-bar screw accordingly, or by adjusting the radius-bar nut and screw while the differential remains in a fixed position. This arrangement provides for this mixer superior adjusting facilities not found in others, in that the mixer may be perfectly adjusted for low speeds and for high speeds by the two separate adjusting devices, and, because of the diaphragm, radius bar and twist of the needle, it will automatically adjust itself in a reasonably proportionate manner for intermediate speeds. Since it depends upon suction for this automatic adjustment, it secures the same quality of mixture, regardless of the action of the throttle or the size of the engine, and is therefore more nearly universal than previous devices. It has no working parts exposed to mud, and may, therefore, be placed in any desired position. Its gasoline outlet is slightly to the rear of the center of the float chamber, which slightly increases the gasoline flow when great power is needed, as on hills.

This device may be used without a heating chamber if it is supplied with warm air, or if the quality of fuel is such that heat is not needed; but a heating chamber can be furnished which is attached immediately after the throttle, where the evaporation is greatest and heat most needed, and this chamber is arranged for either water or hot gas, as may be preferred.

Not many power tests have been made of this device, but such as have been made indicate 5 to 10 per cent. more power than other carbureters gave on the same motor.

FIRST FALL MEETING OF A. S. M. E.

The American Society of Mechanical Engineers will hold its first fall meeting on Tuesday evening, October 8, in the main auditorium of the Engineering Societies' Building, 29 West Thirty-ninth street, New York City. The subject of the meeting is Industrial Education, and both college technical courses and student apprenticeship courses will be discussed at length by men who have been in charge of theoretical and practical institutions. Professor John Price Jackson will read a paper on "College Technical Courses and Apprenticeship Courses Offered by Manufacturing Establishments," and Dr. Henry S. Pritchett, president of the Carnegie Foundation, as well as of the Society for the Promotion of Industrial Education, and Professor Dugald C. Jackson, of the Massachusetts Institute of Technology, will deliver short addresses, while a number of manufacturers have been invited to speak informally.

A GENERAL REVIEW OF CARBURETION.

Under the title of *Automobil-Vergaser*, there has just been issued from the press of M. Krayn, Berlin, W. 57, Germany, what is probably not alone the first, but likewise the most complete, special study that has been devoted to the subject of the carbureter and its functions. It consists of a volume of 138 pages illustrated with no less than 130 sketches, showing the principles of the majority of standard European carbureters as well as a number of drawings illustrating the theories of carburetion.

LETTERS INTERESTING AND INSTRUCTIVE

ANSWERED MORE BRIEFLY THAN CORRECTLY.

Editor THE AUTOMOBILE:

[919.]—In reply to a letter, No. 906, printed in "The Automobile" of September 19, in which the inquirer asks for information as to the overheating of the gearcase of his car, and states that he also finds it difficult to keep the grease in it, I think it is most likely caused by the fact that he puts too much grease in the case, which would cause it to both leak and overheat. In all probability the engine overheats through the slipping of the clutch. All beginners, as a rule, cover their cars with grease and oil, thinking they will profit by it, but the result is quite the contrary.

The letters are interesting, but would be more instructive if they were answered *more correctly* than briefly. I hope you will not find this criticism indiscreet, as I think it a benefit to both the editor and the reader.

H. LECONTE.

New York City.

We are always glad to have any of our readers criticise the answers given in this department, or, in fact, any other part of THE AUTOMOBILE, and for this reason we have emphasized that portion of your letter preferring accuracy to brevity by putting it in italics. If we were not brief it would be impossible to answer the number of letters received within a reasonable length of time, and a question long unanswered loses its interest. But to our knowledge we have never intentionally sacrificed the correctness of an answer for the purpose of making it short, and at times have been at pains to devote a column or more to the answering of a question, even though its length necessarily meant the omission of other inquiries until later issues.

In looking over the letter you refer to, it does not strike us that the answer thereto is unusually brief, and, so far as we can see, it covers most of the commoner causes giving rise to the complaint in question, particularly in view of the fact that the inquirer supplied so little detailed information. However, whenever you come across an inquiry in our columns which, from your experience, you feel better able to answer correctly than has been done, we will always be glad to publish your letters.

AN OPPORTUNITY WANTED FOR STUDY.

Editor THE AUTOMOBILE:

[920.]—Not being able to obtain what I want by watching advertisements and otherwise, I am coming to you with my troubles:

I wish to make a thorough study of the ignition and fuel questions as applied to the automobile. It is not practicable for me to attend a college, so I must get it from text-books or some other way. I have studied some of the primary books, such as Homan's "Self-Propelled Vehicles" and "Elementary Electricity," by Swoope. If you help me in any way by suggestions I shall feel much indebted to "The Automobile," from which I have received many profitable lessons.

EDWARD E. DEAN.

New York City.

Apart from obtaining an outline of the theory of the subjects in question, it is unfortunate for your purpose that little or no further help is to be obtained by the aid of textbooks. The matters in question are not yet sufficiently well established to have made this possible. Considerable of value appears from time to time in the technical press, but even this can be of no great help unless supplemented by practical experience. Make the acquaintance of some chauffeur, or try to obtain permission to spend your leisure time watching the repair men in a garage or shop. Under such circumstances, observation alone will be a great aid, and doubtless the workmen will be willing to help you by answering questions as well as by volunteering information, though as a rule one must depend mainly on his own senses in such a situation. Theoretical knowledge is, of course, a necessity, but when carried to an extreme becomes a detriment rather than an advantage. Having obtained a good groundwork in the rudiments you will be able to apply this only by observation and practice.

HOW TO WIRE DRY BATTERIES FOR IGNITION.

Editor THE AUTOMOBILE:

[921.]—As a subscriber to "The Automobile," I would like to ask the proper way to wire up dry cells for a four-cylinder engine using jump spark, to give the longest possible service. I enclose three rough sketches of wiring diagrams of different kinds and would like to know which is the best.

LOWELL ELLIS.

Warren, Mass.

Sketch number 3, showing two sets of six cells each, wired so that either set may be used at will, is the best of the diagrams

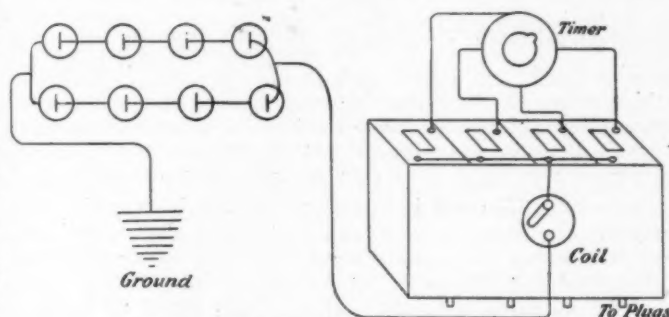


FIG. 2—Plan of wiring showing four cells in service.

submitted, particularly when it is modified by the addition of a third point on the coil box switch, permitting both sets to be used in series-multiple, as indicated by the dotted line amendment we have made to your sketch. This would permit the use of either set of cells singly, or, after they had been run down somewhat, of the use of both together merely by moving the

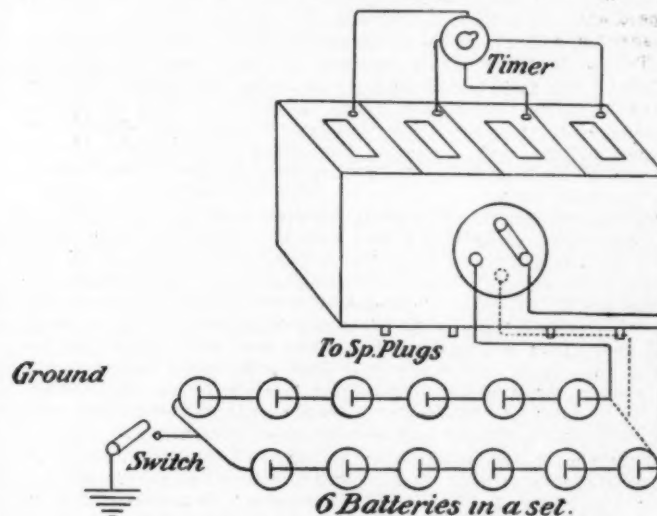


FIG. 3—Plan of wiring showing six cells in service.

switch. We do not think it advisable to employ less than six dry cells. Your sketches, numbers 1 and 3, are practically the same, so we have omitted the former; number 2 has the disadvantage of having but four cells in series, thus reducing the voltage at the expense of the current and thereby greatly shortening the life of the battery, nor does it provide any reserve.

HERE'S A MIGHTY HARD NUT TO CRACK.

Editor THE AUTOMOBILE:

[922.]—As I am a subscriber to your very interesting journal and very much interested in automobiles, I wish to ask you to print in your next issue the answers to the following questions. I am about to get out a patent on a transmission, which I term "the sliding key transmission," and also a friction transmission which I

consider superior to any they have got on the market. Now, do you suppose that one or the other or the two will be a success as to advantages and efficiency, and whether they will find a ready market for them or not? Also a patent system of reducing the charge of an internal combustion engine, consequently reducing the consumption of gasoline. Do you think this would be of any advantage? And again, do you suppose there is still a good market for a good air-cooled engine? I would deem it a great favor to see the answers in your next issue.

N. J. G.

Grand Rapids, Mich.

Frankly, you have given us a conundrum in your first query. With absolutely no information as to the details of the mechanism in question, you might just as well have closed your fist and asked us to guess whether you had a button or a gold dollar in it. Many of the most promising inventions fail utterly to materialize the hopes of their inventors, and likewise some apparently worthless ones turn out to be immensely valuable. Yours may be in either the button or the gold dollar class; we do not know, and our guessing would not benefit you, as the man who buys such a thing wants "to be shown."

Anything that tends to make the internal-combustion motor more efficient and more economical should have a good market value. The same is true of the demand for a good air-cooled motor. To put it in the vernacular, it depends entirely upon whether you are able to "deliver the goods" or not. Neither we, nor many who are in an even better position to judge of such things, could tell you to an absolute certainty at the outset whether your invention would be highly successful or not.

DIMENSIONS OF PROSPECTIVE SIX-CYLINDER.

Editor THE AUTOMOBILE:

[923.]—I have been working on the plans for a six-cylinder engine for my own use, and would like to have you make any criticism or suggestions you see fit regarding its dimensions or design. It is intended for a two-passenger runabout capable of making a little speed and still serve for cross-country use. A two or three-speed transmission is to be employed with double chain drive.

The cylinders are to be water-cooled, and have 5-16 inch walls, with a 1-inch jacket space around the valves, which are oppositely disposed, the jacket extending 1 inch below the piston when the latter is at its lowest point. The cylinder and head are in one casting, and the water-jacket wall is 3-16 inch. The bore is 6 1-4 inches, and the stroke 6 inches. The valves are 2 1-2 inches, with a 2 1-4-inch opening; both to be mechanically operated. What should be the proper lift?

The crankshaft has a bearing between each pair of cylinders, the crank pins being 3 1-4 inches long by 2 1-2 inches in diameter, with a 1 3-8-inch cheek, 2 3-4 inches wide, between them. Is this cheek heavy enough? The end bearings are 2 1-2 by 6 inches. The piston pin is 1 1-4 inches in diameter, with a 3-4-inch hole through it. The connecting rod is 12 inches long, with brass bearings measuring 1 1-4 by 3 inches at the piston end. What should the flywheel dimensions be? What speed should the motor have for ordinary use? What would be its speed limit, and how much power would it develop? What size wheels should be used, and what gear reduction employed with a three-speed transmission?

What should the compression be, and would a long stroke be more advisable or not? What speed should an outfit of this sort give in good working order on a good track? Will you kindly tell the engine dimensions and gear reduction, also size of the wheels of the Peerless "Green Dragon"?

A. L. CHAMBERLAIN.

Ames, Ia.

Answering your first question, according to the theory of valve design the inlet should be 1-4 the cylinder diameter and the exhaust 1-3, the theoretical lift for full opening being 1-4 of the valve diameter. According to this standard your dimensions are quite correct; but this has not been followed in recent practise, and you will find many motors of smaller size have 2 1-4 and 2 1-2 inch valves. They could be made slightly larger, reducing the lift correspondingly, thus making a much quieter and smoother running motor; 1-2 inch would be plenty of lift. We think the dimensions of the cheek quite sufficient, provided the crankshaft be made of good material, such as alloy steel. Designers vary considerably on the subject of flywheel dimensions, but we think you will find

a 14-inch wheel, with a 4-inch face and weighing about 85 pounds, most of which is placed in the rim, to be quite satisfactory. The permissible flywheel dimensions must naturally be governed by the other features of your design, such as clearance, material to be employed and the like, the above being for cast iron.

A normal speed of 800 to 900 r. p. m. would be about right for a motor of the dimensions you name, and it could probably be speeded up to 1,300 r. p. m. with good effect. According to the recently adopted A. L. A. M. formula, its horsepower would be 98.5, and when speeded up to the limit this would be increased to about 110-115 horsepower. This is based on a compression of 60 to 65 pounds to the square inch. The power could be considerably increased by raising this factor, but in such a case the car would hardly be fit for anything but racing pure and simple. Thirty-six-inch wheels should be employed, and a suitable gear reduction for use with a three-speed transmission would be 1 1-2 to 1. A longer stroke would be more advisable on the score of efficiency, but not for such a car as you contemplate; the weight rises very rapidly with a slight increase in the length of the stroke, without advantages sufficient to compensate for it. Track speed is very largely a factor of recklessness in taking turns, but such a car should do 75 miles an hour without any trouble, and more on a straightway. We do not know the dimensions of the Peerless "Green Dragon" car, but doubtless either the makers will supply them upon request, or some reader who is familiar with the car will do so through this department.

HOW TO PROPERLY TIME VALVES.

Editor THE AUTOMOBILE:

[924.]—Can you give me, through "The Automobile," the proper way to time the valves of a two-cylinder, four-cycle motor, and a four-cylinder, four-cycle motor? The latter has mechanically-operated inlet valves, while the two-cylinder motor has automatic inlet valves; both run at about 1,200 r. p. m., and accelerate to about 1,500 r. p. m.

C. W. BYE.

New York City.

Where the two-cylinder motor is concerned, it is only necessary to time the exhaust valves. Before starting, look the motor over carefully and see if there are no timing marks on the face or side of the rim of the flywheel, usually the former. These are made to coincide with a guide mark on the frame or cylinder of the engine, just back of the flywheel. Failing these marks, remove the oilpan or bottom of the crankcase, so that the position of the cranks can be seen. This will serve as an index to the position of the pistons in the cylinder. As the motor's normal speed is high, the exhaust valve should be given considerable lead, and it should begin to open at a point corresponding to 10 to 15 per cent. of the length of the stroke from the bottom of the piston's travel, and thus bring its complete opening about when the piston is within 5 to 8 per cent. of finishing its downward stroke. Turn the motor over until the position of the crank shows the piston to have arrived at the point indicated, and set the camshaft so that the valve will be fully open. The contour of the cam will, of course, provide for its proper closing, which must be fully completed by the time the piston reaches the upward limit of its travel, so as not to delay the opening of the automatic inlet valve. As the cams are either integral or are pinned fast to the camshaft, timing one cylinder will suffice for both. After having completed the operation and adjusted the springs of the inlet valves, turn the motor over by hand a number of times to note the action of the valves before attempting to start it under its own power.

The operation is much the same in the case of the four-cylinder motor with mechanically operated valves. The exhaust should open and close at the points already indicated, and this valve of the first cylinder may be selected as a

guide for timing all the exhausts in case they are actuated from an independent shaft, and the inlet valve of the first cylinder for all the inlets. If both are on the same shaft either may be taken, for, as already mentioned, the cams are all fixed in place, and if one be properly set the others will be correct. The inlet valve should begin to open some distance before the completion of the exhaust stroke, as it is necessary to give it a lead also in a high-speed engine. It should be fully open either at the exact moment of the closing of the exhaust valve or slightly in advance of it, and it should remain open after the completion of the suction stroke for a period equivalent to 10 to 12 per cent. of the compression stroke. If properly designed and the position of none of the cams has been disturbed, all this is taken care of by their contour and their setting on the camshaft, so that it is only necessary to time either the opening or closing of one valve properly, and the rest must naturally follow.

CARE OF PNEUMATIC TIRES DURING WINTER.

Editor THE AUTOMOBILE:

[925.]—As subscribers to "The Automobile," we would like to obtain some information regarding the care of pneumatic tires throughout the year.

Would you advise removing the tires from the car during the winter and hanging them up in a cellar or similar place, where there is some dampness?

WEIMER & SON.

Rosewood, O.

Dampness is not essential to the preservation of rubber, but rather a detriment, and most rubber manufacturers caution users to store tires in a cool, dry place, which, however, should also be dark, as sunlight is injurious to rubber. If the car be stored in such a situation it will only be necessary to jack it up so that the weight is removed from the tires, although we consider it really an advantage to remove the tires where the car is to be laid up for any length of time. Before storing it might be an advantage to have the tires put in good repair, in case there is any necessity for it, such as cuts and holes in the tread, as this not only puts the tires in condition to be used instantly whenever wanted, but also conduces to their preservation. The maker of the tires will doubtless furnish any detailed information you desire on the subject, on application direct or to the nearest agency.

AS TO THE THERMO-SYPHON COOLING SYSTEM.

Editor THE AUTOMOBILE:

[926.]—Will you kindly answer the following questions through "Letters Interesting and Instructive?"

1. What is the thermo-syphon system of water circulation?
2. Would it be advisable to use it with a four-cylinder, two-cycle engine having no fan back of the radiator, but having a fan in the flywheel?

3. Can the ordinary type of radiator be used with the thermo-syphon system?

MORTON E. MYERS.

New York City.

The thermo-syphon system of water circulation depends upon gravity for its action. As water is heated it becomes lighter, and if it be under pressure this warm water will be displaced by the colder water back of it, which in turn, becoming warmer than the water behind, will also be displaced, thus setting up a constant circulation. This is the principle upon which the ordinary domestic hot-water system, or kitchen boiler, operates. The cold water apparently enters at the top—the same place as the hot water escapes, but actually it is led to a point near the bottom of the boiler, by a pipe on the inside of the latter, before being discharged. An outlet at the lowest point of the boiler connects it with the waterback placed in contact with the fire in the kitchen range, and the return pipe from the latter re-enters the boiler at a point about two feet from the bottom, and almost that distance above the cold-water inlet inside the boiler, so that the two streams never meet.

2. This system is very successfully used on some well-known makes of car, both foreign and American, and there

is no reason why it cannot be applied to the car you mention. The lack of a fan behind the radiator is no drawback, as the Renault—probably the chief advocate of this method of cooling—not only dispenses with a radiator fan, but has a radiator located back of the motor in an apparently very much enclosed position. Considerably more water is required than with systems using forced circulation, and this is the chief objection urged against the thermo-syphon.

3. The ordinary radiator can be employed with such a system, but it should be designed of sufficient capacity to accommodate the greater amount of water necessary. Care must also be taken to provide circulating pipes of larger diameter than where a pump is employed, and the circulation must be facilitated by using bends of large radius and avoiding sharp turns.

MORE ABOUT TYPES OF RADIATORS.

Editor THE AUTOMOBILE:

[927.]—We notice your reply to No. 913 in "Letters Interesting and Instructive," September 26 issue of "The Automobile," and would be pleased if you would send us the address of the writer.

We think you were fair in your reply, but would say to you that a whole lot of the radiating proposition is guesswork. As a matter of fact, we have made up several special coolers of our Rome vertical spiral tubes to take the place of expensive honeycomb radiators on high-priced foreign cars. We have merely taken out the honeycomb core and inserted our cooler in the foreign-made frames, with nothing added in the way of external dimensions, and have succeeded admirably where the original cooler failed. How would you account for that? The next auto show will have a good many recruits in the vertical tube ranks, and you, as news dispenser, should give this condition of affairs as generous attention as you have given our competitors in the past, who now make their entire effort on the cellular and honeycomb type of radiators.

LONG-TURNEY MFG. CO.,

Rome, N. Y.

Geo. M. Turney.

The mere fact that a car is of foreign origin, or high-priced, is not conclusive evidence that every one of its components represents the highest degree of efficiency or the best method of manufacture, as both foreign and high-priced designers, the latter on either side of the Atlantic, have made numerous mistakes. Doubtless your success is due to the fact that you avoided the original designer's errors in addition to increasing the efficiency in other ways.

A MANUFACTURER'S PERTINENT SUGGESTION.

Editor THE AUTOMOBILE:

[928.]—If I may be permitted an editorial suggestion, I would call your attention to the enclosed clipping, being a report of the address of Melville E. Ingalls to the American Banking Association at Atlantic City, N. J. This gentleman, while stating what is undoubtedly a fact, is "following the leader" in blaming the automobile for all the bad things that he thinks are happening. There have been several such comments made recently, and it is about time for an automobile journal to call a halt on the extravagant statements which would put the brunt of any possible bad times on the automobile.

Mr. Ingalls says that in the last one or two years \$400,000,000 has been spent on the automobile. There has never been a year in which the value of automobiles built in this country has been over \$50,000,000, if, in fact, as great as that. It is inconceivable that \$350,000,000 have been spent on up-keep and incidentals, that would not have been spent did the automobile not exist. Mr. Ingalls is talking through his bonnet if he is correctly quoted.

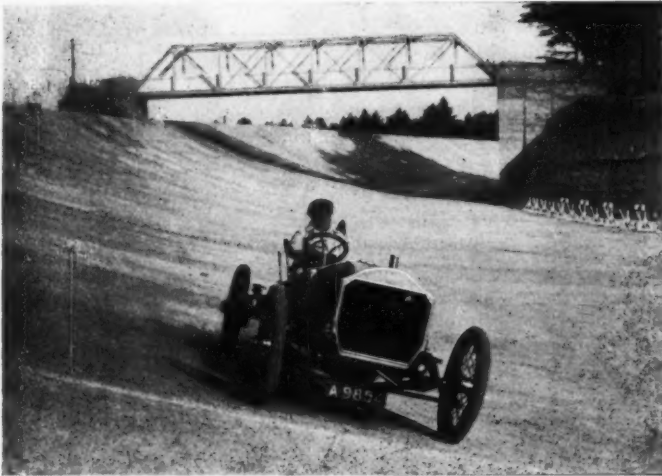
On the contrary, the automobile, after the first blush of extravagance which is now about over, will prove to be one of the greatest possible commercial advantages, just as the steamboat, the railroad, the trolley or any other means of saving time and annihilating distance has proved to be a benefit.

I would suggest that Mr. Ingalls and the other gentlemen who are fond of saying bad things about the automobile, would also figure how much money is spent annually on gin rickies, for example, on diamonds, on "more than enough to eat," "more than enough to wear," or any one of the thousand other national extravagances.

Detroit, Mich.

FRANK BRISCOE.

EDITOR'S NOTE.—As the only reference to the automobile in the clipping in question was its inclusion in the category of national extravagances and the citing of the figures mentioned, it is not reproduced here.



CHAS. J. GLIDDEN SAMPLING BROOKLANDS SPEED COURSE.

TOURIST GLIDDEN TRIES SPEEDING.

LONDON, Sept. 16.—After adventures in the heavens with intrepid French aeronauts, Globe-Girdler Glidden has descended on London's "suburban" autodrome to taste the joys of a "79" clip. There are no water breakers, no restrictions, there is safety up to ninety miles an hour, but the American world-girdler will not admit that it can equal touring. Without waiting for a brush with Edge or Lancia, Charles J. Glidden got aboard his trusty Napier and jogged off a Land's End John O'Groats trip.

Mr. Glidden arrived in New York on September 24, via the *Kaiser Wilhelm II.*, for a winter's rest at his home in Boston. His total mileage to date is 42,367 miles.

MORE SAMPLES OF AMERICAN ROADS.

Indiana is proud of its gravel roads and of the mileage of them which she is constantly increasing, but there are parts of the State, particularly in the south, where they pass over land only recently reclaimed from swamps, and as these are not built roads it only requires a comparatively small amount of rain to convert them into morasses. How true this is may be judged by the photograph, showing a Premier "24" roadster. The car is owned by a prominent Indianapolis contractor and has seen several thousand miles of service over similar roads, during which time its bill for repairs is said to have amounted to \$15. The portion of the road shown in the illustration leads to a town where the car's owner has buildings in course of construction and the car has been over it daily for almost a year past. Frequently the plastic clay and sand is right up to the hubs.



PREMIER SUCCESSFULLY NEGOTIATING HUB-DEEP INDIANA MUD.

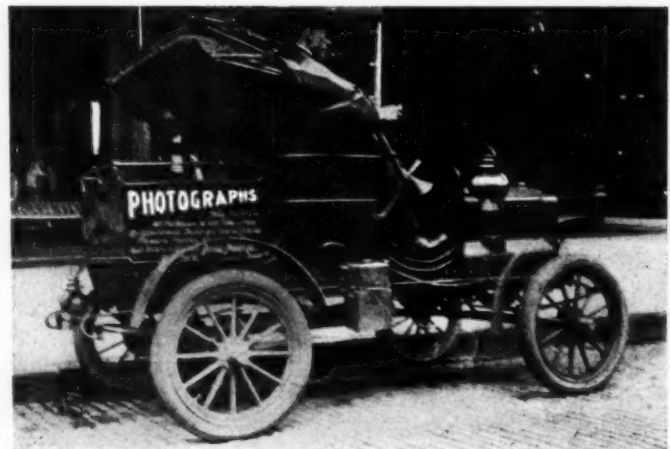
TOURING CAR AND CAB SERVICE FOR GOTHAM.

New York is promised a modern automobile service by the Touring Car and Taxi-Cab Service Company, a concern just incorporated with a capital of \$1,000,000. Dr. Louis H. Matthez, vice-president of the company, states that arrangements have been made to obtain a large number of high-class autos for public service at prices which shall put the vehicles within reach of the general public. Sixty touring cars will be in operation by the first of the year, and by the end of next year there will also be in operation 125 Renault taximeter cabs of 10 horsepower. Later 250 more of these small vehicles will be put in operation.

Thomas Reed, Jr., is president of the company, Dr. Louis H. Matthez, vice-president, and R. H. Gordon, Jr., secretary and treasurer. The board of directors consists of the above officers and Dr. Preston Satterwhite, W. T. Patterson and D. Nevius.

A PHOTOGRAPHER'S USE OF THE AUTO.

"It probably costs me \$50 a month, I admit," says Royal T. Gillett, one of the Grand Rapids, Mich., hustlers in the photograph business, "but if I didn't use that Maxwell in my business I would have to hire two additional men in order to get all of my outside work done. I am able now, by having the auto, to do it all myself. So I get what is the equal of the services of two



HOW A MICHIGAN PHOTOGRAPHER FINDS THE MAXWELL HANDY.

men for \$50 a month. By its use I fill three and four appointments every afternoon, sometimes miles apart, where I could only do one under ordinary circumstances."

NEW BOOKS FOR AUTOMOBILISTS.

A Four-language Dictionary.—Automobilists traveling abroad, and those members of the industry who have relations with foreign countries, have often felt the need of a special dictionary dealing with automobile terms in the most widely spoken European tongues. Vocabularies of English-French and English-German expressions are notoriously incomplete when called upon to deal with the technicalities of the automobile. The want has been largely supplied by three volumes of the "Dictionary Autotechnic," published by Richard Carl Schmidt & Co., of Berlin. English, German, French and Italian are dealt with, equivalent expressions in each of these four languages being placed in parallel columns. Volume I has a list of German words in alphabetical order, followed by their equivalent in the three other languages; Volume II treats French in the same way, and the third volume arranges English words and phrases in the same manner. Although there are certain shortcomings in the translation of the more technical terms, the dictionary can be recommended for travelers and all ordinary use.



MANY distinctive features of design and construction will mark the 50-horsepower Pennsylvania car for 1908, which will be officially known as Type C. Beginning with the motor, this is of the overhead valve type employing two camshafts and with separate rocker arms for each valve. The cylinder dimensions are 4 3-4 by 5 1-4-inch bore and stroke, respectively, and they are cast in pairs with water jackets integral, an unusually liberal allowance for water space having been made. The camshafts are each carried in four bronze bearings, and are located inside the crankcase, as will be evident from the view of the under side of the motor with the oil pan removed. They are arranged so that they can be withdrawn complete, including their bearings, through the end of the crankcase, and their driving gears are all accurately stamped so as to facilitate proper replacement.

Valves.—The same degree of accessibility is noticeable where the valves are concerned. The latter are mounted in cages housing the spring and other small parts, and combining to form a complete unit, which is locked in position in the cylinder head by means of a ring with a hexagonal inner face. A combination asbestos and copper gasket interposed between the valve cage and its seat insures a gas-tight joint and also allows for expansion. The valves are thus readily removable, and their withdrawal from the cylinder head exposes the interior of the entire combustion chamber, as well as the piston head, which is a great advantage when necessary to clean out carbon deposits. The valves themselves are made with cast-iron heads and nickel stems, while the rocker arms are hardened forgings and the push rods are tubular, with accurately machined adjusting ends.

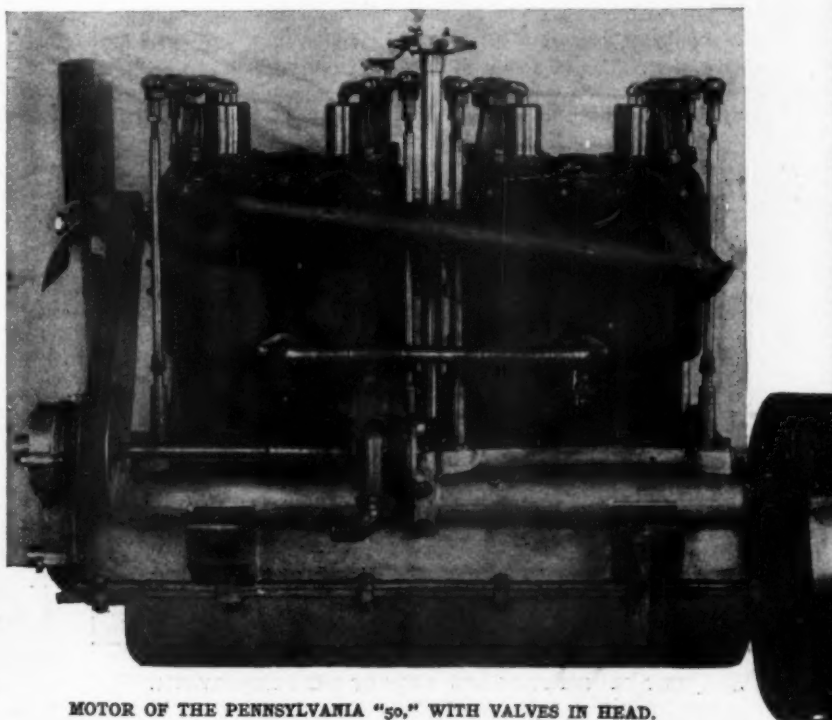
Crankshaft and Its Kindred Fittings.—The crankshaft is a hollow drop forging, supported on die-cast bearings of liberal proportions, the latter insuring long freedom from undue wear. In addition to providing a great deal of jacket space, the circulating pump, which is of the gear type and gear-driven, has a large capacity, delivering 8 gallons per minute at 600 revolutions. The hollow crankshaft is utilized to facilitate lubrication, which is taken care of by a Kinwood pressure feed oiler, driven by an eccentric and strap from the flywheel end of the camshaft, supplying oil under 90 pounds pressure to the principal bearings. Oil leads are also taken to the timer, the tor-

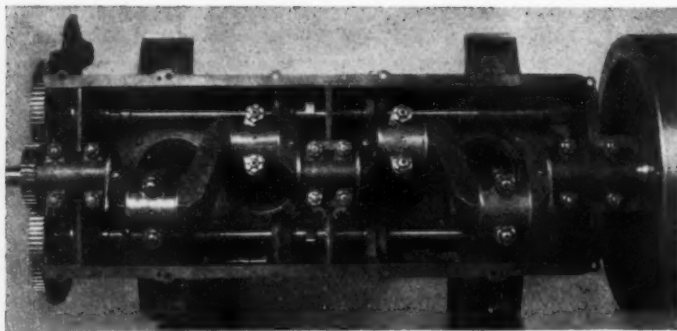
sion hanger and ring, and to the gearset and rear axle, making six in all, besides which other moving parts are supplied with oil or grease cups. The clutch spring and thrust are lubricated from the hollow camshaft, while the wheels are packed with hard grease.

Ignition.—The high-tension system of ignition is employed, the timer being located on an aluminum standard accessibly placed between and above the cylinder bearings. It is driven by spiral gears located on the interior of the crankcase and lubricated by splash.

Transmission.—As the first step in the transmission of the power, an internal cone type of clutch is employed, having a broad face, and with its angle so designed that it is free to a very large extent from the objectionable fault of taking hold jerkily. It is fitted with a ball spring-thrust, as well

as a ball thrust at the outer end, to take up the strain when disengaged. Hardened steel dowel washers are used between the flywheel and crankshaft flanges and between the clutch cone and flywheel, as well as on all universal joint flanges. A double universal joint is interposed between the clutch and the end of the main driving shaft, these joints being designed with unusually large driving surfaces. The clutch and its universal are so arranged as to be not only accessible, but also easily removable. The reason for the use of these joints is to be found in the fact that the gear-set and rear axle driving mechanism are combined as a unit. The former is contained in the extension of the differential housing, which is made of manganese bronze. The gears are of one-inch face and are all made of chrome nickel steel, which is also true of the shafts, the latter being carried on liberal-sized annular ball bearings. Operation is by the selective method, and two sets of ball-bearings with spacers are placed adjacent to the

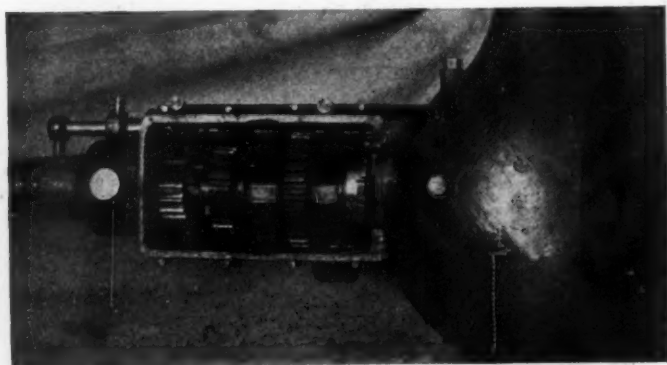




UNDER SIDE OF MOTOR SHOWING CRANKSHAFT DETAIL.

bevel pinion, thus insuring absolute alignment, further precaution against derangement being found in the cage of roller bearings, fitted to the round end of the main shaft that rotates in the pocket gear. This insures a parallel position of the transmission shafts at all speeds. The driving thrust between the main bevels is taken up by a one-inch steel ball inserted in the pocket gear. In addition, a positive interlocking system is employed, so that the gear-set is not only designed to be extremely durable, but is also proof against accidental injury at the hands of the driver. It is constantly oiled direct from the pressure lubricator on the motor.

Gearset and Differential.—Some idea of the arrangement of this combined rear-axle unit and gearset may be obtained from the illustration, which pictures it with both the gearset and differential housing covers removed. The latter is a spherical casting of Parsons' manganese bronze. In addition to the many obvious advantages of this arrangement, practically every part of the transmission, with the exception of the countershaft, can be readily withdrawn through the open end of the differential housing. The differential itself and the driving shafts of the floating live axle are each self-contained and also easily removable. Five jaw clutches are fitted on the squared ends of the axle driving shafts, and engage their corresponding member mounted on the rear wheel hubs, this arrangement being clearly illustrated in one of the accompanying photographs. The weight of the car and stress of the load are taken care of entirely by large annular ball-bearings, and the differential is also mounted on similar bearings with self-contained ball thrust bearings. Taken all in all, the design is one that lends itself very readily to inspection or dismounting, beside combining with this feature a form of construction excellently adapted for the purpose in view. Chrome nickel steel is liberally employed throughout the components of the transmission, the driving bevels, main driving shaft, axle driving shaft, and the axle itself, as well as the torsion tube, all being made of this material. The last named member is supported at its forward end by a steel hanger, fitted with a spherical bronze ring, permitting the tube to travel longitudinally or circumfer-

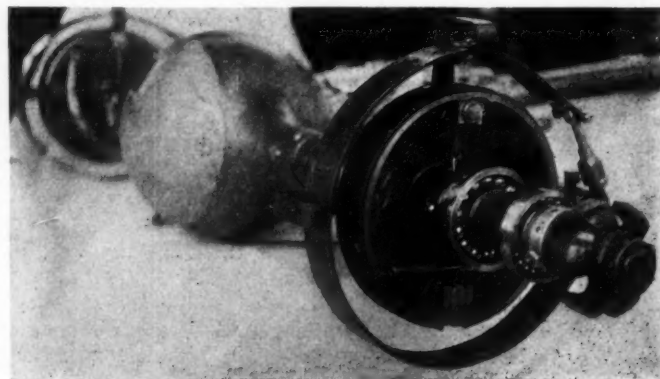


UNIT TRANSMISSION AND AXLE OF THE PENNSYLVANIA.

entially, the whole being attached to the frame. The rear axle is securely anchored to the frame by means of adjustable tubular reach rods.

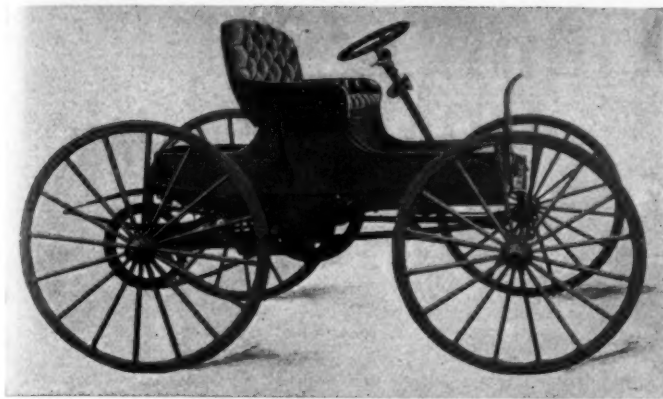
Front Axle, Steering Arm, and Brakes.—The front axle is a one-piece drop-forging with the spring saddles integral, while both the axle itself and the steering arm have been designed with an exceptional factor of safety. The weight of the car and pivot action is carried on one-inch steel balls, located in the dome of the yoke, and secured by a bronze bushing. A recess is made in the top of the spindle to receive the ball, this construction making it necessary to lift the entire weight of the car before the spindle can be removed from the yoke. The steering arms are attached to the spindles by means of tapered broached holes, and are securely locked, while the cross connecting rod is placed behind the axle. Two sets of brakes are fitted, the pedal or foot brake being of the external constricting type, while the emergency brake, actuated by a lever traveling in the change-speed guide, is of the expanding type. The wheels are carried on annular bearings, set to shoulders with spacers, this arrangement, as well as the brake construction, being clearly illustrated by the photograph showing one of the axle driving units.

Chassis.—The foundation of the chassis consists of the usual type of channel section pressed steel frame, heavily reinforced, and carried on a pair of 2x38-inch semi-elliptic springs forward with 46-inch rear longitudinal springs,



EXTERNAL AND INTERNAL BRAKE, AND REAR WHEEL BEARINGS.

shackled at the forward end, and tied to a transverse spring anchored to the frame by means of a steel bracket at the rear. The steering gear is of the external and internal worm and nut type, fitted with a spring socket tie rod end. The wheels are 34 inches in diameter and are fitted with 3 1-2-inch front and 4 1-2-inch tires rear. The steering column passes through a base attached to the dash and footboard, making it perfectly stiff, while the housing of the steering mechanism is securely fastened between the main and sub-frames. The spark and throttle controls are mounted in the customary fashion on a stationary sector over the steering wheel and are designed so as to be conveniently operated with the left hand. The body is made of aluminum and is designed to withstand road shocks without injury. Leather and hair upholstery on a liberal foundation of springs complete this essential of the car, the lines of which are neat and attractive, as will be apparent from the photograph illustrating the car ready for the road. Numerous pockets and compartments for storage, as well as a foot rest and robe rail, together with other similar fittings that go to complete the interior of the tonneau, are fitted. The wheelbase is 114 inches and the tread standard, while in complete running order the car tips the scales at 2,800 pounds. With the usual equipment of lamps, tools, and the like, the car lists at \$2,800, the makers being prepared to furnish an imported magneto at an additional charge of \$200. The same chassis is also equipped as a high-powered runabout by making several modifications.



MONARCH MODEL C, A NEW IOWA PRODUCTION.

ANOTHER BUGGY-TYPE AUTO FROM THE WEST.

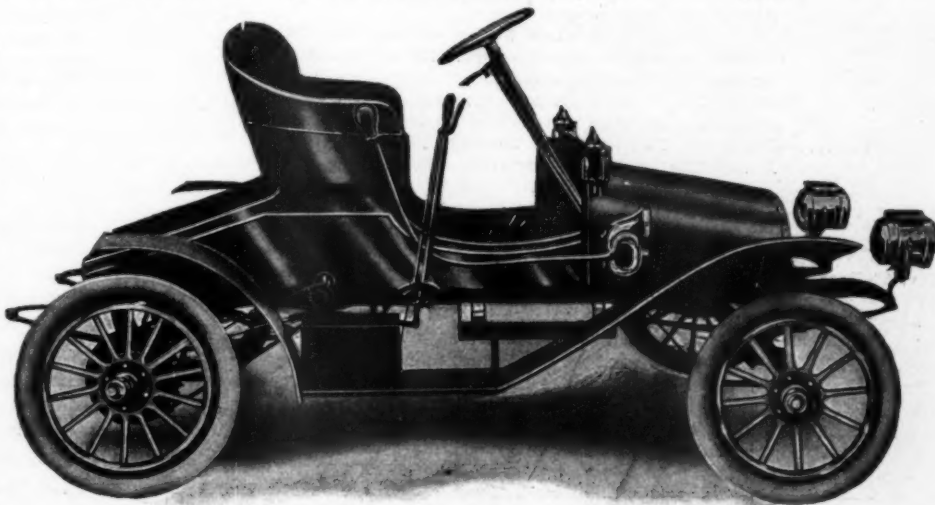
"Monarch Model C" is the official title of the car which will constitute the 1908 product of the Monarch Machine Company, Des Moines, Ia. As will be apparent from the illustration heading this column, the car belongs to that aptly-named class the buggabouts, which are destined to form such an important factor in the automobile production of this country in the near future. The power plant consists of a single-cylinder, four-cycle water-cooled engine, with a 4-inch bore and 6-inch stroke, the latter making for economy in fuel consumption and consequent efficiency. It is rated at 5 horsepower, and, owing to its position on the chassis, it has been found possible to employ a flywheel so proportioned as to overcome to a large extent the infrequent impulses of the engine, and which also enables it to carry the load smoothly at low speeds. The cylinder and crankcase are cast together, of close-grained charcoal iron, and the engine complete is suspended from an angle iron frame in such a manner as to insure proper balance when working at its maximum load. The cylinder is bored, reamed and faced with special care, the same pains being taken in its construction as are employed in the making of much more expensive engines. The piston is cast of close-grained iron, of sufficient length to give proper bearing surface, and is fitted with rings cut at an angle in accordance with the best standard practice. The wrist pin is of steel, and of ample diameter, while the connecting rod bearings are of bronze, carefully machined. The valves are placed in the head, are mechanically operated, and the timing gears are machined from solid blanks. The valve action is taken direct from a single cam keyed solidly to the pinion. The valves are accurately ground to their seats and are held by tempered steel springs.

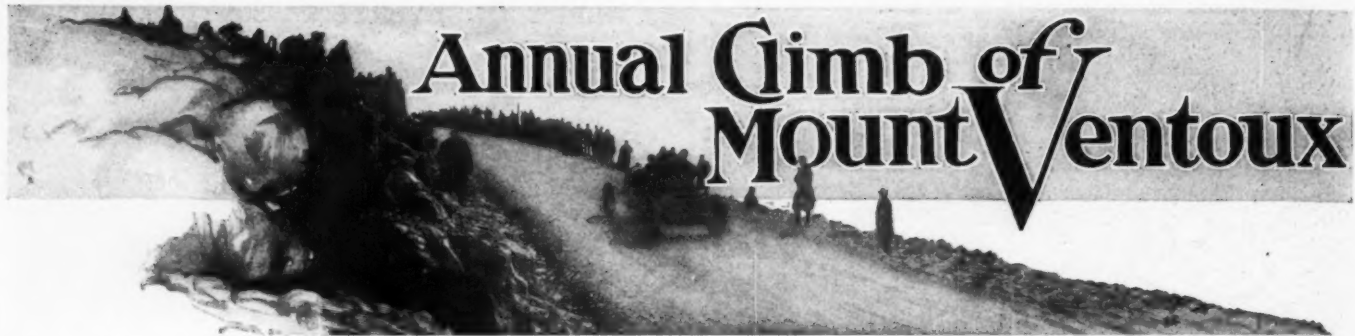
The illustration practically suffices to describe the remainder of the car. It has the typical buggy body, measuring 39 by 63 inches, with a hardwood floor, swell front spring cushion, heavy steel steps and good quality patent leather dash. The suspension consists of amply proportioned full-elliptic springs, three in all being employed, one placed transversely forward and the other two longitudinally in the rear. Both the front and rear axle are of 1 1/8 inch solid steel, the latter being of the coach style. A wheel steer is employed, the usual fifth wheel, consisting of a full-circle, double plate wrought iron construction with clip king bolt, constituting the remainder of the steering gear.

HERE'S THE EVERYBODY'S AUTOMOBILE.

The name Everybody's given this new car, which hails from St. Louis, is suggestive of a machine designed for the use of the average man, and such has been the purpose of its makers, the Everybody's Motor Car Manufacturing Company, St. Louis, Mo. In fact, it combines many of those features which seekers after the ideal in automobile construction and design have agreed are indispensable to an automobile reduced to the lowest terms of simplicity. For example, its power plant consists of a two-cylinder, four-cycle, horizontal-opposed, air-cooled engine, which is rated at 10-12-horsepower. This is located transversely under a bonnet forward. The design gives a perfectly balanced engine with a minimum of parts for the power output required. Provision is made for cooling by casting the cylinders with a liberal amount of surface in the shape of fins, air being blown over them constantly by the large fan embodied in the flywheel, which is placed forward of the motor, thus producing a strong blast of cool air over the numerous deep and thinly cut fins. The cylinder dimensions are 4 1/2-16-inch bore by 4-inch stroke, both cylinders being made in a single casting. The cranks are set at 180 degrees, and the crankshaft is mounted on two liberal-sized bearings. The inlet valves are of the automatic type and are accessibly placed, while the removal of the large crankcase cover permits of reaching the entire interior of the motor. Lubrication is by splash, the supply in the crankcase oiling all the main bearings as well as the timing gears for the exhaust valves ignition timer, two sight-feed compression cups being placed directly on the cylinders and a third on the crankcase to maintain the supply in the latter. The normal speed is 900 r.p.m., and the engine may be speeded considerably above this with a consequent increase in power, though it develops ample power at low speeds.

The transmission is of the friction type, the friction disk being constructed of a special composition driving against a specially impregnated fiber pulley, the two materials having a maximum coefficient of friction and, consequently, great holding power. The contact between the two is controlled by a roller thrust bearing coupled to the clutch pedal. The change speed lever shifts the friction pulley horizontally across the face of the composition friction disk, giving a range of speed varying from a standstill to 30 miles an hour forward, and from nothing to 17 miles an hour on the reverse. Every part of the mechanism is made accessible by placing the engine under a bonnet and the transmission directly under the seat, permitting of its adjustment or oiling merely by lifting the cushion flap. Final drive is by means of double chains. The wheelbase is 78 inches and the weight 800 pounds; with pneumatic tires the car lists at \$450.

**"EVERYBODY'S" RUNABOUT, AN AIR-COOLED WESTERNER FROM ST. LOUIS.**



A VIGNON, FRANCE, Sept. 20.—At the foot of a wild, cloud-capped mountain, in a romantic, sunny, south country, with strong attachments to the past, loud-lunged automobiles are being started by a medallioned official up a rough grade guarded by red-legged troopers. Exactly 13.42 miles away, in the calm and cold of the Government Observatory, a second official is recording the time of arrival of the diversified vehicles. Between those two points the machines, big and little, have been put to a rude test—as the French term it—for the hill is terribly difficult to climb, with its grades varying from 8 to 20 per cent., its stony and dusty surface and its sharp turns by the side of yawning precipices, unprotected by wall or barrier. Five years ago it was the "Mountain Despair" of all automobilists.

Yet these 13.42 miles were covered in less than twenty minutes—to be exact, in 19:59 2-5—by Rougier on the Grand Prix Dietrich. An average of 41.2 miles an hour on such a climb to the clouds is indeed fast going. It left Collomb's Rochet-Schneider record of last year a long way behind, but failed to lower the record climb, established by Cagno on a Fiat, by the narrow margin of 17 seconds. It had been damp during the night, and the turns were rather too wet to expect record performances. Bablot, handling the Brasier Grand Prix racer, with which he broke a world's five-kilometer record down in the plain at Salon a few days before, made a very poor start, went terribly fast as he neared the top, but was 29 seconds slower than his rival from the

north. Both were equipped with Michelin tires and derived their ignition from a low-tension Simms-Bosch magneto.

The going was fast throughout on this second day, for all the stripped tourists were powerful machines. Classification was according to cylinder area and weight. An exception was made for the six-cylinder class, allowed to run irrespective of size of cylinders or weight. It was in this division that a Rossel, handled by Jenné, made the fastest time of any tourist—24:54 4-5. A second Rossel was three minutes behind, and an Aquilla Italiana third. Last year's records were all made to appear small.

A Cottin & Desgouttes, in the 117 to 125 mm. bore class, was next best in 25:16 4-5 for the 13.4 miles. Brouhot won in the class approximating 24-30-horsepower, time 28:04 3-5; Mors made 28:22 in the 30-40-horsepower class, and Radia won in the 40-60-horsepower series with 25:44 1-5.

There was less public interest in the first day's event, devoted to motorcycles and small runabouts selling at something round \$800, but there was an excellent demonstration for supporters of popular automobiles. Some of the drivers had not the experience of Rougier and Bablot, and gave the hazardous spectators an occasional scare on the turns, but not a single machine showed weakness. Little 110-pound motor bicycles reached the top in less than 40 minutes, and, at the other end of the scale, an eleven-passenger Ariès omnibus made the climb with full load in 1 hour 27 minutes.

COMING EVENTS AS SHOWN BY THE AUTOMOBILE CALENDAR.

AMERICAN.

Shows and Meetings.

- Oct. 24-31.....—New York City, Grand Central Palace, Eighth Annual Automobile Show, Automobile Club of America and the American Motor Car Manufacturers' Association.
- Oct. 26.....—New Haven, Conn., Second Regiment Armory, Third Annual Automobile Show, New Haven Business Men's Association.
- Nov. 2-9.....—New York City, Madison Square Garden, Eighth Annual Automobile Show, Association of Licensed Automobile Manufacturers.
- Nov. 9-16.....—Philadelphia, First Regt. Armory, Automobile Show, Philadelphia Automobile Trade Association.
- Nov. 16-23.....—Baltimore, Third Annual Automobile Exhibition, Automobile Dealers' Association. B. R. Johnson, manager, Piper Building.
- Nov. 29-Dec. 6.—Chicago, Casino Garden, Second Annual Auto Parts Show. A. M. Andrews, secretary, 184 La Salle street.
- Nov. 30-Dec. 7.—Chicago, Coliseum and First Regt. Armory, Eighth Annual National Automobile Show, and First Annual Commercial Vehicle Show, National Association of Automobile Manufacturers.
- Dec. 14-21.....—St. Louis, Mo., New Coliseum, Second Annual Auto Show, St. Louis Automobile Manufacturers' and Dealers' Association.
- Dec. 23-Jan. 4.—New York City, Madison Square Garden, Importers' Salon. C. R. Mabley, secretary and manager.
- Feb. 3-8.....—Buffalo, Convention Hall, First Annual Power Boat and Sportsmen's Show, auspices of Buffalo Lunch Club. Dai H. Lewis, manager, 760 Main street, Buffalo, N. Y.
- Feb. 20-Mar. 7.—New York City, Madison Square Garden, Fourteenth Annual Motor Boat and Sportsmen's Show.

Mar. 9-14.....—Buffalo, Convention Hall, Sixth Annual Automobile Show, Automobile Club of Buffalo. Dai H. Lewis, manager.

Mar. 21-28.....—Toronto, Canada, St. Lawrence Rink, Automobile Show. R. M. Jaffray, manager.

Apr. 5-12.....—Montreal, Canada, Arena, Third Annual Automobile and Sportsman's Show. R. M. Jaffray, Mgr.

Races, Hill-Climbs, Etc.

- Oct. 4-5.....—Trenton, N. J., Inter-State Fair Automobile Races, Includes 24-hour Event.
- Oct. 19.....—Kansas City, Mo., Kansas City Jockey Club Track, Race Meet, Automobile Club of Kansas City.
- Oct. 21.....—St. Louis, Mo., International Aerial Race of the Gordon Bennett Prize, Aero Club of America.

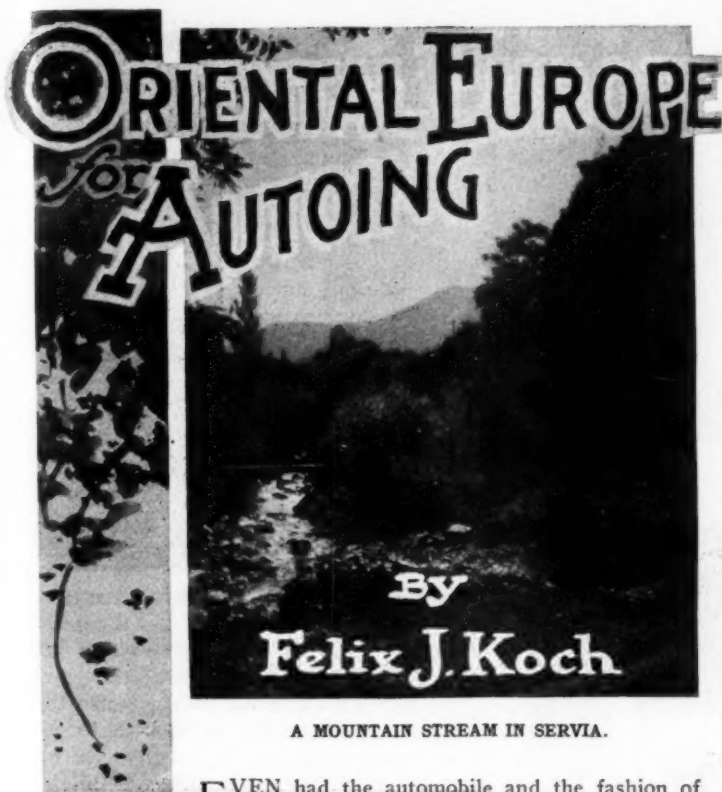
FOREIGN.

Shows.

- Sept. 28-Oct. 7.—Denmark, Copenhagen International Auto Show.
- Nov. 11-23.....—London, Olympia Motor Show.
- Nov. 12-Dec. 1.—Paris, Exposition Decennale de l'Automobile, Grand Palais, Esplanade des Invalides, Automobile Club of France.
- Nov. 22-30.....—London, Agricultural Hall, Stanley Show.
- Dec. 5-22.....—Berlin, Germany, Automobile Show.
- Jan. 18-Feb. 2.—Turin, Italy, Fifth International Automobile Exhibition, Palace of Fine Arts, Valentino Park, Automobile Club of Turin.

Races, Hill-Climbs, Etc.

- Oct. 1-15.....—Paris Electric Vehicle Competition, A. C. F.
- Oct. 20.....—France, Gaillon Hill Climb.
- Nov. 1-15.....—France, Voiturette Contest near Paris.
- May 16, 1908.....—Sicily, Targo Florio, Automobile Club of Italy.
- June 20-July 5, '08—Grand Prix, Dieppe Circuit, Automobile Club of France. (Exact date to be announced.)



A MOUNTAIN STREAM IN SERBIA.

EVEN had the automobile and the fashion of touring been current at such a time, to have suggested an auto tour of Bosnia thirty years ago would have been the same as suggesting a tour to the head waters of the Nile. Not alone would no trace of roads or of accommodations have stared the prospective traveler in the face, but his very life would have been endangered by the peoples of the localities. To-day a tour of Bosnia would be one of the most delightful in Europe.

This is chiefly so from the fact that Bosnia, although nominally a part and parcel of the Ottoman empire, is *de facto* an Austrian province, but under military government—which tolerates the delicious fallacy that the occupation is but a temporary one, and that everything is still in the "field." Permanent post-offices, railway lines, roads, and bridges are all labeled "field appliances" in order to keep up the fiction. Howsoever that may be, the military government gives the civil authorities despotic power to order this, that and the other improved, and there are thousands of soldiers sent down each year to do this work, at no cost whatever to the government. On the other hand, the hatred between Austria and Hungary keeps the officers of either side in the joint government of Bosnia in line, and all the evils which autocracy usually imposes on a people are eliminated.

Ideal Roads Are Everywhere in Evidence.

As a consequence the roads in Bosnia to-day are the pink of perfection. Taking the course of the donkey trails, they follow blue foaming rivers into narrow canyons, where even at the present time brigandage seems possible, and where the lone cavalry police at an occasional turn of the road is the sole guarantee of one's safety. But these roads are so picturesque that they weave a spell, causing one to wish to return again and again. There are the donkey-trains, laden with panniers of ruby-red apples or with the hay piled so high about the animal's flanks as to make one wonder as to the whereabouts of the donkey itself. There are the Christian peasants, the men ahorse, the women and children following afoot, one and all in gay costume, and, over all, the red braided turban, which, though the replica of the headwear of the Riffians of India, marks the Bosniac from the Mussulman in Bosnia.

Moslems there are, too, along the road; and while up to the time of the occupation Turk and Christian lived in towns carefully apart, to-day their farms adjoin in the villages. The home

of the Moslem, however, is marked by the lattices at its windows, the little latticed porticos and the high walls with the knockers to the doors—that the women may take an airing unseen by passing men. In the occasional kavana, or coffee-house, the tavern of the Nearer East, one meets these hooded damsels—the finger-nails and the hair dyed with henna, the face shrouded in veils of white, with a slit just over the eyes. Behind them trudge the children—the girls in bloomers, tied in at the ankles, their hair in two stumpy braids down the back, and likewise fiery red with henna; the boys in more openly bisected bloomers and a calico waist much beflowered.

A Government-Controlled Hotel System.

Beyond the road is the town, and there one finds the true delight of autoing in Bosnia. In order to encourage the traveler, the government has taken over the hotel system, and has erected splendid hotels, as fine as any in the world. These it leases out, but only after setting the price that may be asked for each room, each service, each item of the bill of fare, and then posting these printed lists conspicuously over the building. In this wise the hoteliers of Bosnia become the most honest in the world.

The cities, and notably the capital, Sarajevo, are taking on the street-building mania, and at this isolated capital asphalt ways lead on as they would in the suburb of an American metropolis. Shopping with the automobile at Sarajevo would be true delight indeed, for there is built the grand bazaar, hundreds of the open shops, all of one kind together and all exposing their wares in the low booth at the front. Colors that dazzle and please the eye are everywhere in this perpetual exposition.

Then, too, for him who has the love of adventure within him there can be made a long ride—a two days' trip over the border into Turkey—following in the wake of the mail caravans, when soldiers ride upon the seats of the stages and the entire roadway is policed. After that one goes through at his peril, but so gorgeous the scenery in these Balkan uplands that all thought of risk is forgotten. As yet the auto tour of Bosnia is unknown. In Budapest there is a semi-governmental bureau which sees to it that the touristy of all the Austro-Hungarian domains is exploited. One of these days it will take up the matter of autoing in Bosnia, and with the affable Austrian and Hungarian military officers for one's hosts—the most charming officialdom in Europe without a doubt—such trips will be a rare treat indeed.

As an automobile country Serbia soon palls on the traveler. Endless plains, grain-fields, and occasionally oak forests where mass the famous herds of Serb swine, and then some little brown-walled red-roofed village, with the somewhat clumsy inhabitants in a deep chocolate-brown woollen suit and cap of the same material. Serbia, too, is not sufficiently primitive to interest, nor are her highways so modern as to make autoing for the pure love of the thing exhilarating. So, unless one simply cares to establish a record of having made a tour in every country of Europe he may as well leave this kingdom out.

Roumania, however, is another question. Poverty-stricken, suffering Roumania is interesting for all that it lacks. To auto in Roumania, more than in Turkey in fact, one must carry his own supplies, his own repair-shop, his own commissary with him. In the little villages there are



THE BAZAAR AT SARAJEVO.

not taverns, but mere grog-shops, so poor that there is only the *peler*, or native wine, and the round, unsalted pretzels, strung across the ceiling, to be had, and, hungry as the tourist may be, if he has not taken food from the nearest big city he must keep growing hungrier still. The secret lies in the agrarian conditions in Roumania. Such is the poverty, due to the holding of the land by the great *patroons*, or land-owners, that the peasant is but too glad to sell all his crop as soon as marketable, all his dairy produce as soon as made, that he may have cash to pay debts perhaps already long overdue. For himself and family he reserves just enough to keep him until next harvest-time, and even then the wolf is ever at the door. The real wolf and the figurative both, for in the cruel winters sweeping these Wallachian plains the wolves come around

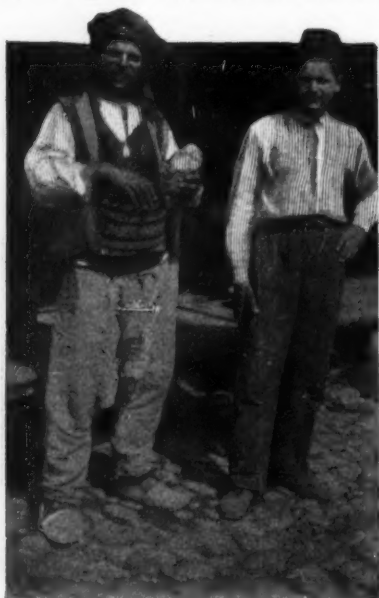
the villages and bay all night.

In the harvest season



THREE GENERATIONS OF SERVIAN.

Roumania is at her best. Out in the long, unbounded grain-fields picturesque peasants—men, women and children—garner the crop. As in old Bible times, the child sits upon the plow to keep it deep in the furrow, but unlike Bible times, and despite the fanaticism of pope-power in this land, the ox is muzzled at the plow, that he may not devour one morsel of what might be sold for hard-earned silver.



THE PICTURESQUE NATIVE MALES.

As for scenery, it is variant. There is the enormous hay-stack, tall as an East Side tenement and almost as redolent, to which landlord and peasants one and all bring their hay as precaution against incendiaries. There is the wheat, or the corn, or the barley, and the meadow, and now and then a beet field or melon-yard. Between are the villages, woe-begone and smacking largely of Dahomeny in Africa. Houses are of a wattling of the branches of the willow, or else of a reed from the Danube, here and there coated over with adobe for plas-

ter, and this perhaps tinted in pale lavender, with a broad band of blue at the sides. To the one-story houses there is a little narrow porch and there hang the peppers and the mangoes, ripening in the sun, while upon the earthen floor of the portico the corn is gathered in great golden piles.

And the people, the simple, tanned, and not unkindly peasants—they are pretty, for their costumes of lavender, all with stitchings in a deeper violet or in purple, and with clean white shirts beneath the coat, to afford the needed contrast. Still more primitive are the gipsy villages, mere burrows in the earth, with the orifice extended and hedged in with boughs, as to some cyclone cellar of Kansas. There the happy-go-

lucky nomads swarm the roads, women and children striking their faces and pulling their hair to invoke the passer's pity, that he may throw them a few centimes for "sugar."

Of course, there is the other side to the picture. If one is willing to stick to the



BOSNIAN YOUTH.



A BELLE OF SARAJEVO.

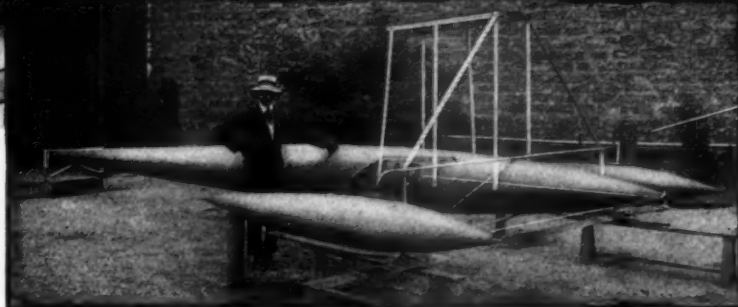


WOMEN OF THE HERZEGOVINA.

cities, notably Bucharest, he will have as easy riding as he would in France. Streets are wide and of macadam or asphalt; there are handsome cafés, with plate-glass windows, gipsy orchestras, and polite waiters everywhere; there are *chaussées* leading out to parks, as the Bois de Boulogne; there is a clearly-defined right-of-way for vehicles bound in each direction, and in fact every accompaniment to autoing in a big city is to be enjoyed. That presents little of the unusual. It is the interior of Roumania that would provide the unique. And as for it—it has hardly been visited by the automobilist.

In order to improve touring conditions in France the national authorities are particularly busy at the present time in the organization of touring centers where travelers may have a central point from which to make excursions to spots of interest. Each center will be provided with the necessary guides, maps, and information on touring within that district. Good results are expected from a competition now being held by the A. C. F. for improvements in the management and organization of hotels.

Next A Mile-a-Minute on Water



TRIPLE CIGAR-SHAPED HYDROPLANE DESIGNED FOR RECORD SPEED BY SANTOS-DUMONT

PARIS, Sept. 23.—Santos-Dumont has made such progress with the hydroplane guaranteed to cover more than sixty-two miles in the hour that an attempt to realize on water this stupendous speed hitherto deemed impossible might be looked for in about two weeks. It will be remembered that Santos-Dumont made a bet with Fernand Charron, the well-known sportsman and automobile constructor, that he would travel on water 100 kilometers (62.1 miles) within the hour. The stakes were \$10,000.

This week, at his private workshop in Neuilly, the young Brazilian aeronaut gave an opportunity to a few friends to inspect the machine with which he expects to accomplish his record-breaking clip. The hydroplane consists, as will be seen from the illustration, of three cigar-shaped floats, built of aluminum and wood and covered with a silk waterproof envelope. The center float is a little more than 32 feet in length, the two others being about a third that size. The three floats are united by a light metal cross frame, and above the center cigar is a raised skeleton platform on which the motor will be mounted. At the rear is a transverse wood float attached by means of metal stays to the tail of the cigar. It is above this frame that the operator's saddle has been fixed, the rudder to be placed later almost directly under.

Without motor or propeller, the hydroplane weighs less than two hundred pounds, which is one of the lightest constructions ever made for its size. In all probability the three cigar-shaped floats will be filled with compressed air. Arrangements have

been made for the supply of a special 16-cylinder Antoinette motor to develop 120 horsepower and not to weigh more than one kilogramme per horsepower; thus the weight of the engine will be about 260 pounds. M. Levavassor, the maker of the Antoinette, has supplied all the motors for Santos-Dumont's latest machines and has made such progress in the construction of light motors that he guarantees weight not to exceed one kilo per indicated horsepower.

Santos-Dumont declares that he bases his success largely on the great saving of weight he has been able to accomplish. Previous attempts at producing high speed hydroplanes have failed, in his opinion, because of needlessly heavy construction. It is certain that the latest addition to the hydroplane world will not err in this respect. No. 18, as the Brazilian inventor has christened his apparatus, for it is the eighteenth in a varied line of balloons, hydroplanes and aeroplanes, is a masterpiece in the art of eliminating skin friction, and appears likely, driven by a reliable motor, to attain the prolonged speed for which it has been built.

Nothing is known as to the place where the trials will take place. The conditions of the wager stipulating that sixty-two miles shall be covered within the hour, and not that the boat must travel a few seconds at that rate, an open sheet of water must be found. At the same time the water must be calm for a hydroplane is essentially a fine weather and smooth water craft.

FRENCH BALLOON AND AEROPLANE CONTESTS.

PARIS, Sept. 29.—A drizzling rain and a strong southeast wind marked the start of the third annual balloon race of the Aero Club of France from the Tuileries Gardens. M. De Nobel, piloting *Le Nord*, was picked up in the North Sea, 25 miles from Ostend, and is probably the winner.

M. Bleriot has traveled a distance of 600 feet, at a height of 50 to 60 feet from the ground, in the aeroplane bearing his name, thus winning the bronze medal of the Aero Club for a flight of over 490 feet. Unfortunately Bleriot retarded his ignition too rapidly at the end of the flight, bringing the machine to the ground so suddenly that it was demolished. The 16-cylinder Antoinette motor was intact and no injury befell the pilot.

During his visit to Paris, Charles J. Glidden took a course in aeronautics under the direction of expert French balloonists. The longest ascension of the American automobilist was 54 miles, covered in four hours, maximum height being 1 3-4 miles.

GERMAN PILOTS FOR BENNETT CUP EN ROUTE.

Captain von Abercron, the well-known aeronaut, accompanied by Herrn Erbsloeh and Hecker, left Bremen on September 24, on board the German Lloyd steamer *Kronprinz Wilhelm*, on their way to St. Louis, where they will participate in the balloon contest. They brought with them the two balloons to be used in the race.

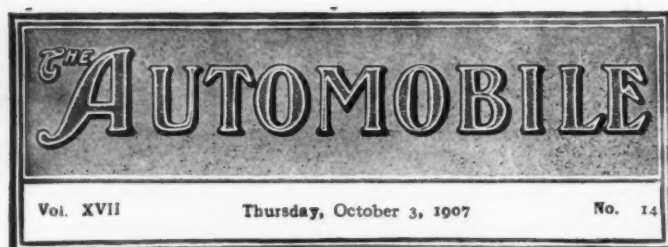
GOVERNMENT AID FOR GERMAN AIRSHIP.

FRIEDRICHSHAFEN, GERMANY, Sept. 24.—According to balloon experts and members of the Imperial Government who witnessed the renewed experiments of Count Zeppelin's airship over Lake Constance, the German aeronaut has developed his system to a remarkable degree of efficiency. A Government subsidy of \$40,000 has been made to assist him in his experimental flights.

One of the weaknesses of the Zeppelin airship is the impossibility of making an ascent without the use of the regular anchorage structure. If the airship were obliged to come down away from its base or from an open sheet of water, it would certainly be damaged, for it would be without means of rising again, and, owing to its size, could not be transported across country. It is about 400 feet in length and 50 feet broad.

DIRIGIBLE AND AEROPLANE TESTS AT ST. LOUIS.

In connection with the balloon competition for the Gordon Bennett aeronautical cup, to be started from St. Louis on Monday, October 21, the Aero Club of that city will offer special prizes amounting to \$5,000 for aeroplane and dirigible balloon competitions. There will be distinct races for the two classes held within the club enclosure, over a course three-quarters of a mile in length. The first prize winner in each will receive \$2,000 and the second \$500. Entry blanks have been issued and can be obtained from J. W. Kearney, club secretary.



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"Good Roads and the Sane Use of Them."

That was the rallying cry of the first good roads and legislative convention held by the automobilists of the country—to give credit where credit is due: held by the far-seeing Automobile Club of Springfield in the commonwealth of Massachusetts. 'Tis well that the autoists have elected to work openly for the improving of the roads, and equally fit that they have publicly shown willingness to discuss with those entrusted with the building of the roads as to the new needs of highway construction resulting from the coming of the motor-driven vehicle. And the lawmakers were participants in the convention, which thus touched upon the building of roads in such manner as to meet changed conditions and also debated how to use these same highways sanely and with due consideration to one another.

Facts are stubborn things sometimes, and a condition and no theory confronts automobilists as a class. Increased mileage exacted from the roads inevitably wears out the thoroughfares more quickly, and the man who travels a hundred miles in a day, as compared to one who covers only ten miles, cannot object to paying more for the upkeep of the highways. An annual registration fee should attend to this phase of the situation, and such a solution has been accepted in one State, with others likely to follow the same plan. This is where the autoist, for his

greater use of the road, pays more than does the owner of the horse-driven vehicle, which has much the lesser mileage.

But as to whether the automobile wears out the road—except by greater mileage—any faster than does the sharp-shod horse and its narrow-tired wagon, is a subject that can be discussed very forcibly from the standpoint of the automobilist.

Nevertheless, the roads are wearing out faster than ever before because of greater use, and something more enduring is demanded. Therefore, it is up to the roadmakers to meet the emergency and they are not averse to asking the automobilist for aid and suggestions in the premises.

Sane use of the roads, and laws to compel such sane use, has become the task of the automobilist, and daily it is more apparent that the owners of the motor-driven vehicles for their own protection, as well as for the purpose of being good citizens, must assist in the suppression and extinction of these heedless buccaneers of the highways. The antagonism of the public is not discriminating, but it is aroused to a degree that results in annoyance and often persecution of law-abiding autoists, who must in self-defense turn upon the erring ones and bring them to their senses or else to their just deserts. Condoning by silence the criminal driving of the few is no longer possible nor excusable; the guilty must be singled out and the executors of the law assisted in doing their duty. Only in this way will the day of the ineffective and unjust speed-trap be brought to its close.

The present administration of the A. A. A., unless we are much mistaken, may be trusted to continue nationally and through its State associations the work so convincingly begun by the successful initiative of the wideawake Massachusetts club.



Opportunities Offered by the Automobile Industry. Due to the influence of what most aptly may be termed the "fast" element in the automobile business, a popular misconception that the latter was something which, in the vernacular, offered opportunities galore for "easy money," became prevalent several years ago. Under this misguided impression, numerous small capitalists plunged their all into the business of "manufacturing" automobiles, which meant buying stock parts of questionable value and assembling them in a manner even less commendable; others have invested their entire available capital in procuring agencies and then sat back to wait for the vast profits that never came; and, more numerous than either of these classes, hundreds of young men have found that work and faithful service are as much requisites of success in the automobile business as in any other line of endeavor.

Of the many who have rushed headlong to this new El Dorado, only to find its promises of untold wealth fade on closer contact, doubtless the ones most sorely deluded have been drawn from that large class that is ever on the *qui vive* to find berths that promise large returns as a reward for little or no effort. Like the opening of a new mining camp, it was inevitable that the overnight growth of such a great industry should have been attended with more or less profligacy, and it is equally true that hundreds of incompetents and ne'er-do-wells profited greatly thereby. Attracted by the thought of being able to do likewise, many have looked upon the automobile industry as an easy path to fortune, only to find to their sorrow that the reality did not correspond with their dreams. The frequency with which queries regarding the advisability of entering the automobile business come to light, many of them appearing in these columns from time to time, makes the occasion opportune to comment upon it, and the statement of a practical man taken from a contemporary and reproduced elsewhere in this issue furnishes an adequate answer as well as one that carries considerable weight. While it was inevitable that such conditions would obtain in the early days of the industry, it was likewise equally certain that their duration would not be a matter of great length, and it is fortunate for all concerned that the end is in sight.

"GOOD ROADS AND THE SANE USE OF THEM"

THE good roads and legislative convention of the Automobile Club of Springfield, Mass., held September 24-25, marks an epoch in the advance of automobilism, and the promoters of this get-together gathering deserve unstinted commendation. That one club should have had the foresight to show the way the national organization of automobilists is honor indeed, and tracing back the growth of the idea one finds that H. E. Marsh was the original suggester, and a trio—consisting of Dr. V. J. Irwin, president; S. L. Haynes, ex-president, and Dr. W. R. Weiser—lost no time in moving a hearty second. Then the work began, and culminated in a well-attended session and a bumper banquet.

These are the A. A. A. clubs which sent delegates: Automobile Club of America, New Jersey Automobile and Motor Club, Automobile Club of Buffalo, Bay State Automobile Association, Massachusetts Automobile Club, Rhode Island Automobile Club, Long Island Automobile Club; Automobile Club of Pittsburg, Automobile Club of Germantown, and Wilkesbarre Automobile Club, all of Pennsylvania; Worcester, Brockton, Pittsfield, Wachusett and Malden, all from Massachusetts; Hartford, Bridgeport and New Britain, of Connecticut; New York, Albany, Rochester, Adirondack and Richmond County, from New York State.

President William H. Hotchkiss, First Vice-President Lewis R. Speare, Secretary F. H. Elliott, R. P. Hooper, chairman of the Good Roads Board, and A. G. Batchelder were the national representatives of the A. A. A.

Highway Commissioners McDonald of Connecticut, McClintock of Massachusetts, Edwards of Rhode Island, Sargeant of Maine and Deputy Beman of Pennsylvania supplied the good roads artillery, and Dr. A. S. Cushman, assistant director of public roads, Department of Agriculture, was another speaker listened to with intense interest, for he spoke in a governmental tone. Then there was Congressman Gillett, State Senator Hayes, Editors Langtry and Howard of Springfield dailies, a goodly amount of legal talent and an overflowing room of listeners. All around it was a mixture of road builders, road users and law expositors. Of course, good couldn't fail to result, and the inevitable outcome was the decision that the A. A. A. must hold a much more extensive event of the same character some time next summer.

Herewith are extracts worthy of repetition in printed form:

W. L. Dickinson, ex-treasurer of the American Roadmakers: "This is the first meeting of the kind that has ever been held in the United States. Autoists have not concentrated their actions toward good roads in the past, and I am proud that the Automobile Club of Springfield is a pioneer in this work, and I hope that the good example it has set will be followed by all of the automobile clubs in the United States."

Dr. A. S. Cushman, assistant director of Public Roads, Department of Agriculture: "The modern road problem has two important aspects: First, the public road is a feeder of our civilization. We take pride in our crops and products, but it is the public roads that must connect them with their market. It is a strange paradox of American progress that we have developed wonderful harvesting machinery and at the same time overlooked the construction of those roads over which the harvested grain must be carted."

William E. McClintock, Chairman Massachusetts State Highway Commission: "The first talk that I ever gave on the good roads question was before an old bicycle club in 1893. The State made its first appropriation for improved roads in 1894, and since then to date has appropriated a total of \$6,500,000. Modern use of roads has brought about changes that tax the skill of roadbuilders."

James H. McDonald, Connecticut State Highway Commissioner: "This is the starting point that means a new era in road building, and the more of these meetings that are held the better for this country. In the last twelve years Connecticut has given \$3,000,000, and has now appropriated \$4,500,000 to make good roads. The speaker has seen the havoc wrought on highways by automobiles, but there was no dissenting voice to the passage of Connecticut's liberal law, so automobilists are free to use any road in the State.

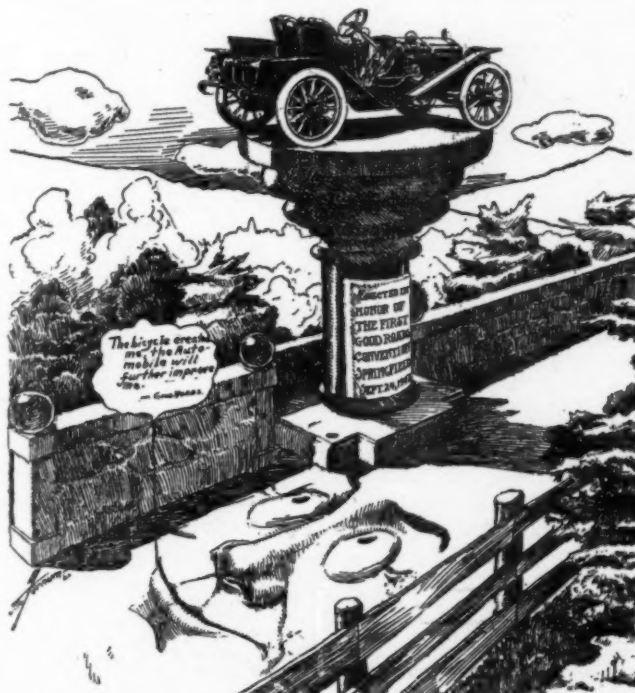
The object of the law was to fix the fool and the hog and do away with the grafter."

J. H. Edwards, Chairman Rhode Island State Board of Public Roads: "A good road may not always be an ideal one in every respect, but it must meet the requirements of all normal uses. Automobiles are subjecting roads to an abnormal strain and wear not contemplated by builders. They are to become a permanent factor in our traffic, and the road builders must solve the problem which they present."

William H. Hotchkiss, President, American Automobile Association: "No club in this country out of over 150 and more has had the courage to hold such a convention, and the national association must see to it that such conventions be held every year."

Robert P. Hooper, Chairman, A. A. A. Good Roads Board: "I think it is time that some one told of what the autoists have done. The movement for good roads was begun by the bicyclists, and

GOOD ROADS REGARDS APPROVINGLY THE MOVEMENT FOR HIS IMPROVEMENT



THIS CARTOON APPEARED IN THE SPRINGFIELD "UNION."

has been taken up and advanced by the autoists. Our damage to the roads has been more than offset by the good work we have done in their behalf. I say that it is proper for the autoists to be compelled to obey the law, but we do object to the existing laws. We think that the money paid in fines ought to go to the State highway commissions. Why should the automobilists pay a tax, when any wagon can draw any load over the same roads? I see no reason why the wagon drivers should not help to support these roads. The time has passed when the farmers can think we are of no use and are criminals."

Congressman F. H. Gillett of Massachusetts: "I like your motto, 'Good roads and the sane use of them.' I am glad that it is the spirit of this convention. The last half of it particularly all automobilists should emphasize and live up to, for unless we do use the roads sanely, reasonably, and moderately, we are likely not to get the good roads at all."

What an A. C. A. Delegate Thought of the Convention.

J. F. Plummer, Jr., a member of the A. C. A. Good Roads Committee, who, with W. W. Niles, chairman of the A. C. A. Law and Ordinance Committee, attended the Springfield convention, expressed himself in this manner as to the gathering:

"I was very favorably impressed with the whole idea of the meeting. It was really the first time that the two interests have gotten together in an amicable way. I mean by that the users and the builders of good roads; and the legislators also figured in the proceedings. I think the friendly feeling shown on both sides, particularly by the Highway Commissioners, indicates excellent results for the future. To use an old expression, it is possibly the beginning of the dawn of a new era. The annual national convention, which will grow out of this first affair, ought to prove a great benefit to automobiling in general. The club deserves a great deal of credit. Personally, I believe the A. C. A. should support a movement of this character, and I am confident that its influence will be unhesitatingly given to such commendable work."

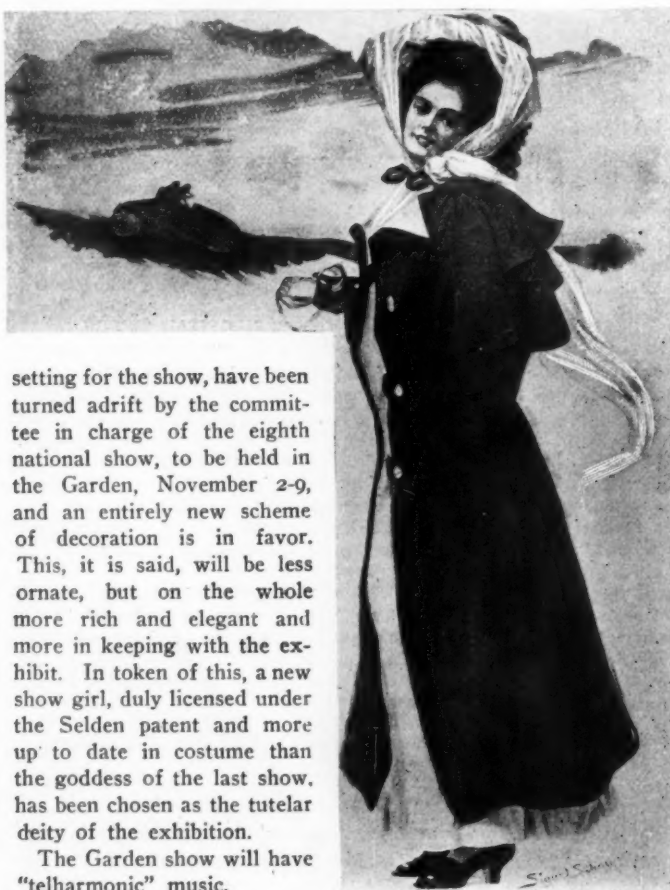
WHY "RAINIER" CANNOT BE TRADEMARKED.

WASHINGTON, D. C., Sept. 30.—A decision has been rendered by the Commissioner of Patents wherein registration of the word "Rainier" as a trademark for automobiles is refused the Rainier Co. Registration was refused on the ground that the word "Rainier" is geographical and on the further ground that it is the mere name of an individual not written in a particular or distinctive manner. That the word "Rainier" is the name of an individual was not controverted by the applicant, but it was contended, first, that it is not merely the name of an individual, and, second, that if it is merely the name of an individual it is written, printed, or impressed in a peculiar and distinctive manner and therefore registrable.

THE GARDEN GODDESS LOSES HER JOB.

From A. L. A. M. Show Publicity Department.

"The chaste plaster goddess who presided over the last automobile show in Madison Square Garden has lost her job. She and her attendant nymphs, who peered impertinently at show patrons from the many pillars of the Swiss garden scene, which was the



setting for the show, have been turned adrift by the committee in charge of the eighth national show, to be held in the Garden, November 2-9, and an entirely new scheme of decoration is in favor. This, it is said, will be less ornate, but on the whole more rich and elegant and more in keeping with the exhibit. In token of this, a new show girl, duly licensed under the Selden patent and more up to date in costume than the goddess of the last show, has been chosen as the tutelar deity of the exhibition.

The Garden show will have "telharmonic" music.

CHAIRMAN THOMPSON ON EUROPEAN EVENTS.

Although but a few hours disembarked from the White Star liner *Baltic*, in from Liverpool, buried under a shoal of correspondence and inundated with telephone calls, Chairman Jefferson DeMont Thompson readily pushed back his chair when a request was made for a chat on automobile events in Europe.

Being one of the leading spirits in the Long Island Parkway, Mr. Thompson was particularly interested in the autodrome constructed by a syndicate of British sportsmen at Brooklands, near London. As a special racing and testing ground for automobiles, Mr. Thompson declares the track to be the most wonderful thing of its kind ever seen. Although there has been one fatal accident, of which he was a witness, the track is as safe as human ingenuity can make it, the appointments are excellent, and the management absolutely clean and sportsmanlike. A large number of influential sportsmen with no trade interests were enthusiastic over the course and would certainly make it successful.

The venture has not been a financial success, though this did not surprise the promoters, who declared before the course was opened that they did not expect it to be a money-making affair. The only drawback to the Brooklands track was the difficulty in reaching it by automobile, for although only thirty miles from London, roads are so narrow and winding and so carefully watched by the police that the journey cannot be accomplished in less than two hours.

Mr. Thompson was much interested in the challenge of S. F. Edge to race a team of six Napier cars against a team of six from any other factory. Mr. Edge gave an assurance that he would take part with a six-cylinder Napier in the next race for the Vanderbilt Cup.

Considerable attention is being paid by Britishers to the tarring of highways, there being hardly a town or village in the popular touring districts which has not been treated in this way. A wonderful example of the value of tarring was shown in the Avenue du Bois de Boulogne, at Paris, which, before being treated was constantly in bad condition as the result of heavy automobile traffic. Treated in a scientific manner with tar, its surface does not disintegrate and it is always free from dust. Mr. Thompson stated that he had obtained particulars of this system and would strongly recommend its use on the Long Island Parkway.

All European constructors were closely interested in the Vanderbilt race and regretted that it had been impossible to hold that event this year. In France, Darracq, Panhard, Dietrich, Hotchkiss and Bayard-Clement all offered one or more cars for next year's race, and a full Italian team was assured by Fiat, Itala and Bianchi. Germany would send a couple of Mercedes and possibly one Züst. The Minerva firm, of Belgium, also showed some interest in the event.

What particularly struck Mr. Thompson was the number of American cars touring in France. At the Bousquet garage in Paris he saw twenty-five or thirty of the best-known makes, and a large number at Fournier's garage. Three years ago an American touring in an American machine was a rarity. There appeared to be no opening for the sale of American cars in France, but in England conditions were different. The prejudice which once existed against American-made automobiles had almost entirely disappeared and prospects of an increased trade seemed bright. American lamps were a conspicuous feature on automobiles throughout Europe.

Germany this year is rather in disfavor among automobile tourists owing to the clumsy and ill-advised tax according to length of stay. Trouble generally befalls tourists through ignorance of the laws. When these are carefully observed foreigners may always rely on courteous treatment. Much is being done by the personal influence of Emperor William to popularize automobiling. At Homburg Mr. Thompson had an opportunity of inspecting the Imperial garage under the charge of Werner, for many years chauffeur and race driver of the late Clarence Gray Dinsmore.



AUTO FUNERAL OF ROY REHMS, CONDUCTED BY THE CALIFORNIA CHAUFFEURS' ASSOCIATION—THE SECOND CAR IS THE HEARSE.

ANOTHER FATALITY CONCLUDES CALIFORNIA TRACK RACING

By R. R. L'HOMMEDIEU.

SAN FRANCISCO, Sept. 25.—The track racing game in California has undoubtedly been brought to an abrupt ending by the sad accident last Saturday on the Del Monte track, when Roy Rehms was killed. This unfortunate occurrence, coming close on the heels of the taking away of Ernest Kelly the previous Saturday, has caused the dealer, owner, and public to demand that the game be stopped. Rehms, at the time of the accident, was driving a beautiful race, had taken the Matheson car over twenty-four miles of the fifty-mile contest in grand style, and was just making the first turn on the twenty-fifth mile when the inner tube in the rear inside wheel blew out, which caused the car to swerve inwards, and Rehms, evidently cranking his car too sharply to avoid the fence, undoubtedly brought the full weight of the car and momentum broadside on the forward wheels, dishing the inside one. The car turned over once and a half times before it stopped. Those who saw the accident say that Rehms was thrown clear of the car and was on his hands and knees when the car rolled over the last time. When found, the hub of the rear wheel was pinning his head to the ground, having crushed the base of the skull, the jaw bone and the bones of the neck, producing instant death.

Herbert Martin, who in the Fourth of July races on the same track drove the big six-cylinder Stevens-Duryea to victory, was acting as machinist at the time. Luckily he was thrown clear of the car and only sustained a broken collar bone and shoulder blade, with some internal injuries near the base of the spine. The latter, however, are not serious, and at the present writing he is supposed to be well out of danger and on the road to recovery. The fifty-mile race for touring cars of 25 horsepower and over, in which the accident happened, was the last event of the day. Up to that time all the contests had been run off smoothly without the slightest apprehension of what was to follow. The track was in fine condition, there being no dust at all, and the killing of Rehms fell like a bombshell.

From an investigation made yesterday of the tires, it looks as if the direct cause of the disaster was the use of a four and a half inch lug in a five inch tire. There are signs on the inner tube of pinching where it rested on this lug, and continuing on a line with this pinching is a small blow-out. The Diamond casings are perfect, and good for many miles more. Another bad feature brought out in the investigation was that on this heavy car only five lugs were used, two of them being four and a half inch. The club which gave the races is one of the wealthiest organizations in this State, and of late has taken a very active part in the advancement of automobiling. Several other events were planned before the rainy season sets in, but it now appears as though the season closed with last Saturday's tragedy.

The California Chauffeurs' Association, of which the dead driver was a member, took charge of the obsequies. There were about fifty automobiles that attended the funeral and went to the grave. The body was carried from the undertaking parlors to its last resting place on a chassis.

Clean Scores of the Endurance Run.

The races were preceded by an endurance run from San Francisco to the noted seaside resort. Sixteen cars started, of which four touched the several checking stations on the second, making actual perfect scores. These were J. S. Conwell's Tourist, L. E. Washburn's Tourist, A. Piepenberg's White steamer, and J. J. Boree's White steamer. The others who made perfect scores coming within the six-minute limit at San Jose, Gilroy and Del Monte were President R. P. Schwerin, in his Winton; Tony Nichols, in a Franklin; Homer Boushey, in a Pope-Hartford; William James, in an Oldsmobile; C. A. Hawkins, in a White steamer; and J. H. Eagle, in a Studebaker.

Several of these drivers undoubtedly would have been among the four winners had it not been for the fact that the watch of the official timekeeper at Gilroy was an erratic instrument. The officials thereupon decided, under these circumstances, that the records at Gilroy should be expunged. They failed, however, to make allowance for the starting time of the cars from Gilroy to Del Monte, which brought in several of the owners a few seconds late. Those who failed to make perfect scores were S. H. Page, in a Packard; Freemont Older, in a White steamer; B. D. Merchant, in an eight-cylinder Hewitt; A. E. Noreen, in an Elmore; William Wagner, in a White steamer runabout; and Sol J. Levy, in a Matheson.

CHRISTIE'S RACING DAYS ARE NOT OVER.

Walter Christie says he is not through with automobile racing, even on circular tracks. He anticipates driving again at Pittsburg, October 5, on the same track on Brunot's Island, where he met with his recent mishap. Christie desires to have it known that the promoters of that meet paid him his prize money, and the next meet is under the same management.

W. Gould Brokaw is now the owner of the famous Christie racing car, but its builder is to have the use of it for competition and record attempts.

Christie now holds the world's one-mile circular track record of 52 seconds, made at Minneapolis, September 7, and this mark is not to be confused with Morris Park performances, which are placed in a separate class, owing to the fact that the track is 1.39 miles in circumference.

GATEWAYS OF THE METROPOLIS.

Automobilists generally, whether dwellers of New York City or only occasional visitors, have usually found it difficult and always confusing to make their way in and out of the city by either the most direct or pleasantest route, and there has been a widespread demand for information of this kind in a concise and convenient form that has only been met by the appearance of the "Metropolitan Automobile Guide." This is a handy book of 382 pages, which in a way may be said to form a sort of key to the "Official Automobile Blue Book," as it gives all the gateways to the metropolis, beside showing their interconnection with the extended routes given in the Blue Book. But it is vastly more than a mere guide for entering the city, as it covers the territory round about New York for a radius of 75 to 100 miles in a manner never before undertaken. There are no less than 74 complete routes given, each one of them outlining a one or two-day round trip and covering in all some 6,737 miles of roads. The routes are illustrated by maps and city diagrams, which are in turn copiously supplemented by much needful information concerning hotel accommodations, garages, repair and supply stations, and the like. Exact mileages are given for every town, together with every turn and landmark of importance along the routes which were all traveled and carefully noted in the course of compiling the volume. The territory covered, in brief, is New York City and its immediate environs, with routes extending to Newburgh, Poughkeepsie and Pawling, on the north; Danbury, Waterbury and Bridgeport, Conn., on the east, including all Long Island routes, as well as to Greenwood Lake, N. Y., the Ramapo Valley, N. J., Morristown and Bernardsville on the west, and with extensions to Princeton, Lakewood and the North Jersey Coast to the south and west. The routes are uniformly laid out in pairs, and any of them may be taken in either direction. Each trip is planned so carefully and concisely that one can easily travel every one of them without stopping to ask questions and by merely setting his odometer to correspond it is possible to pick up the route at any intermediate point.

DETROIT TO HAVE TWO AUTO SHOWS.

DETROIT, Sept. 30.—As the result of the dissatisfaction arising on the part of the dealers over the plan put in force two years ago to make the agent assume the entire burden of local exhibitions, Detroit is to have two shows this winter. The dealers have considered it only just that the maker should bear some part of the expense, and this fact, coupled with the early date of the Chicago show this year, is responsible for the announcement that the Detroit Automobile Dealers' Association will hold a show of its own at Riverview Park Auditorium in December, shortly after the close of the Chicago event, from which many of the exhibits will be transferred. The second show will be held by the Tri-State Auto and Sportsmen's Association in the Light Guard Armory in February, 1908.

PALACE EXHIBITORS TO GIVE DEMONSTRATIONS.

Even if the exhibitors at the coming Palace show had agreed among themselves not to give demonstrations during the course of the show, it is probable that circumstances would have proved too strong for them. This because of the fact that the show is to be held in an ideal month for driving and prospective purchasers will, in numerous cases, want to be shown the superiority of the six-cylinder car, of which no less than fifteen different distinctive models, representing as many makers, will be staged. Both the makers and the average autoist are agreed that cars as a rule have reached a point where the demonstration is entirely superfluous, but while admitting the lack of need for a try-out to be convinced, the public still asks for demonstrations, and doubtless will do so to a much greater extent this year, as the conditions will be more favorable.

AKRON AMERICA'S TIRE-MAKING CENTER.

AKRON, O., Sept. 30.—With the passing of 1907, Akron's claim to be the "City of Tires" will be so strongly established that it cannot be longer disputed. Due almost entirely to the great expansion of the rubber industry here, the city's population has been considerably increased in that time, and the influx of rubber workers bids fair to be maintained, as it is learned from interviews with officers of the various companies whose plants are located here that there is scarcely a tire factory in Akron that is not completing, building or planning enlargements.

By the end of the year, the B. F. Goodrich Company will have added 300 to 400 men to its force. One additional five-story building, now in course of erection to increase its facilities, will house 300 new operatives alone. The company advertises for tire makers constantly, but the supply never seems sufficient.

The Diamond Rubber Company expects to complete a substantial addition to its plant by December 1, meaning an increase of 150 men by that time, the addition to the working force totaling 2,300 men by the end of the year. Consequently, for the present twelvemonth, this company will add no less than 400 men.

The Goodyear Tire & Rubber Company expects to add 150 men to its forces by the end of the year, while the Firestone Tire & Rubber Company will also increase its already large payroll. Though this company only completed an addition to its plant but a short time ago, another and much larger increase in its facilities is already being planned. Another large company which is not ready to announce its plans definitely expects to add a tire department as a new feature, and will employ 100 men. Still another is doubling its capacity and will have 350 men at work when additions are completed.

In announcing its plans for 1908, the Diamond Rubber Company has made it known that it will market a greater variety of types and styles of tires than ever before. In addition to the regulation clincher and quick-detachable clincher in round, flat, non-skid and Bailey treads, Diamond tires will be made in the several types of tread for Fisk rims, and there will also be a Diamond mechanical or Dunlop type in a limited number of sizes. The clincher type will be made in all the American and foreign sizes, that is, both inches and millimeters. The Diamond guarantee for 1908 will cover all of the established makes of quick-detachable rims, which is a departure from the rule adhered to during the present year.

THE AMERICAN MICHELIN PLANT.

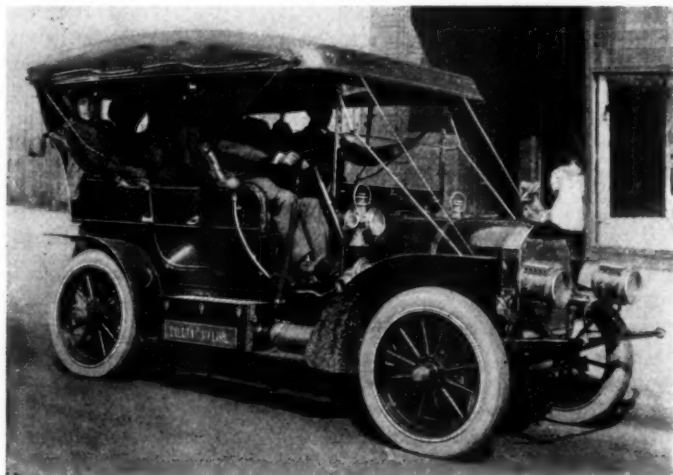
A few months after the announcement that Michelin, the great French tire manufacturer, would produce in the United States, a statement is issued that the firm's American factory is completed and that output will appear almost immediately. During the visit of M. Edouard Michelin, president of the European companies, to this country, a short time ago, purchase was made of the plant, machinery and building of the International A. & V. Tire Company, at Milltown, N. J., and a company incorporated with a capital stock of \$3,000,000. It was decided to use the existing buildings for store houses and offices only, eight new buildings being erected on the plans of the Turin factory in Italy, built in 1906.

Although the contractors only broke ground on June 3, seven of the buildings are completed and stocked with special machinery sent from Europe. A new 2,440 horsepower plant, operating two one-thousand kilowatt turbines, made by Westinghouse, have been installed, and auxiliary power is obtained from a 700 horsepower engine. The products of the American plant will be identical with those of Clermont-Ferrand, France; Turin, Italy; and London, England. Michelin tires will be made in American sizes, quick detachables and clinchers will be produced, and the Michelin dismountable rim, together with the anti-skid used in the great racing events of Europe, will be manufactured in the New Jersey factory. It is intended to establish branches in all the large cities of America, where complete stocks will be carried.

A LEISURELY AND INTERESTING JAUNT.

With the double purpose of giving the 1908 Pierce-Racine car a thorough testing out, such as not even its native Wisconsin hills could afford, and to collect data for the Chicago Automobile Club, showing not alone the feasibility but the practicability of the average autoist making the same trip with his family and unaided, Sales Manager S. E. Wherritt, accompanied by a party of four and a driver, left Chicago, and two weeks later turned up in New York. The route lay via South Bend, Ind., Toledo, Cleveland, Buffalo and Albany to New York City, and no attempts whatever were made at speed or any other kind of records, the party coming along leisurely, as would the average autoist when on tour. The data compiled includes the gasoline and oil consumption of the engine, distances, roads, hotel accommodations and the like, and was also intended to include the time and nature of the different repairs made, but, according to Mr. Wherritt, who visited the offices of THE AUTOMOBILE while in New York, the trip had been a close approach to the millennium of touring, roads and weather excepted, of course.

"We have never had to stop five minutes for repairs since leaving Chicago, and, as for tires, we didn't even bring a spare one with us. You would hardly believe it possible,



SALES MANAGER WHERRITT AT WHEEL OF PIERCE-RACINE.

but we haven't pumped our tires since starting on the trip, so that blowouts and punctures alike have been unknown. And that's a pretty good record with six people in the car," said Mr. Wherritt, speaking enthusiastically of his successful trip and the excellent performance of the car's Goodyear tires. "There is absolutely no reason why any man with a good car can't take his family and do the same thing," he continued. "There was only one time on the whole trip when we were in danger, and that was at a bad grade crossing on a curve in Ohio. The train could not be seen until one was almost on the track. The return will be via Philadelphia, Atlantic City, Baltimore, Washington, Pittsburg, Columbus and Indianapolis, and in the same leisurely manner.

AEROCAR COMPANY'S PLANT BID IN.

DETROIT, Sept. 30.—Sold under the hammer to satisfy the claims of creditors, the Aerocar Company's plant brought a trifle more than 50 per cent. of its appraised valuation, which was admittedly about one-half the actual investment. The property, equipment, unfinished cars, patents and all outstanding accounts went for \$96,500, to a local real estate firm. Although the identity of the party or parties back of the deal was carefully concealed, it is understood that A. Y. Malcomson secured the plant. As head of the defunct concern he was heavily involved, and it is said he bid the plant in to protect himself.



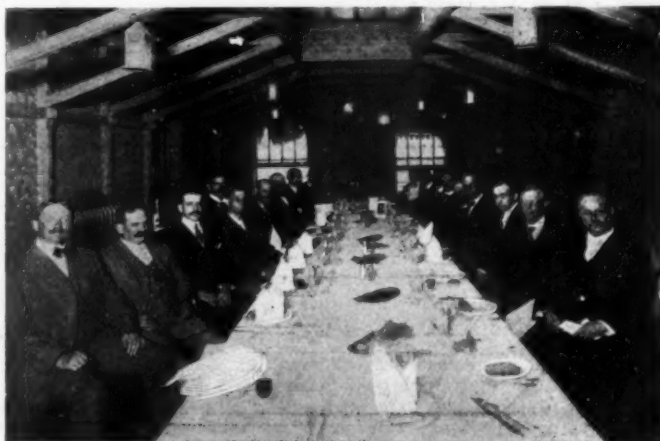
OUR STRENUOUS CHIEF EXECUTIVE IN THE WHITE.

PRESIDENT ROOSEVELT AGAIN TRIES THE AUTO.

As a fitting wind-up to their season of strenuous service at the summer capital, the government's White steamers ended their work at Oyster Bay by conveying the President and his family from Sagamore Hill to the railroad station, quite in contrast to the use of horse equipages in former years. The departure of the chief executive from Oyster Bay is a momentous event in the annals of the town, and the entire population turns out en masse to bid its most distinguished inhabitant a fitting farewell. The president has come to regard the automobile so favorably as the result of the two White steamers which have been an important adjunct to the summer colony, and which have been under his constant observation, that he departed from previous precedent in utilizing them, even going so far as to express his delight with the satisfactory service that the cars had rendered.

PRELIMINARY TO THE GARDEN SHOW.

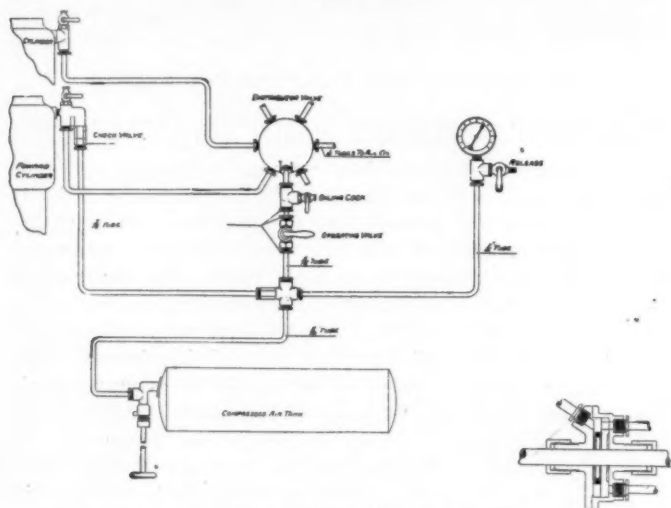
As a kind of opener, or rather an appetizer, the show committee of the Association of Licensed Automobile Manufacturers entertained the Madison Square Garden staff at a banquet at Mouquin's on Sixth avenue last week. Colonel George Pope, chairman of the committee, presided. The speakers included Secretary James Young, of the Madison Square Garden Company; Marcus I. Brock, of the show committee; M. L. Downs, its secretary; T. J. Reynolds, superintendent of the Garden; Antoni Pellegrini, head of the ticket-selling forces; Enos Joseph, in charge of the gatemen; C. N. Schroeder, business manager; M. J. Pike, receiving superintendent; James S. Stewart, electrician; Warner K. Paxon, chief engineer; H. T. Clinton, Arthur N. Jervis and Henry Caldwell, of the A. L. A. M. publicity bureau. Others present were Charles Spect, W. J. Brennan, T. W. Fenn, Fred. Fralick, Thomas Jones, John A. Smith and E. J. Hazard.



MADISON SQUARE GARDEN'S STAFF AS A. L. A. M. GUESTS

THE WINTON SELF-STARTING DEVICE.

Complying with the demand for a self-starting device on the modern car, the Winton company has made a compressed air equipment for this purpose a feature of the new Winton "Six-Teen-Six," the apparatus being the result of close study devoted to the problem for some time past. The first cylinder of the six is relied upon to supply the motive power, and only a part of its compression is necessary to maintain the apparatus. This is piped through a check valve to a storage tank located between the driving shaft and the left frame rail under the rear seat. The check valve on the cylinder is spring-controlled and the spring has sufficient pressure to withstand the compression of the fresh charge,



DETAILS OF THE NEW WINTON SELF-STARTING DEVICE.

so that only the spent gases are utilized. To start the motor the valve on the dash, as indicated in the accompanying sketch, is opened. This permits the pressure to flow from the tank to the distributor valve, which is driven by the camshaft and timed so that the entire pressure of the tank is led to the cylinder that is about to fire, each cylinder except No. 1, being equipped with a check valve, to which is attached the usual compression cock. The pressure entering the cylinder that is about to explode forces its piston downward and the charge is fired, compelling the motor to take up its cycle. Should the first cylinder not accomplish this, however, the pressure is then automatically shunted into the cylinder that is next to fire in the regular order and forces its piston past the firing point, having previously compressed whatever charge remained in it by the revolution of the crankshaft and drawn a fresh charge into the third cylinder to fire. The motor will continue to turn over under the pressure of the storage tank automatically distributed through the moving valve, just as if it were operating under its own power. As the capacity of the tank is calculated with a generous factor of safety the motor will turn over for a number of revolutions and cannot fail to start, if in good order. The other components of the system are the pressure gauge, mounted on the dash, to which is attached a release cock; a cock for oiling the distributor valve, the latter being shown in section, in the small sketch at the bottom of the drawing, and the cylinder connections with their check valves. Five-sixteenths inch tubing is employed on the supply side of the apparatus with 1-4 inch tubing from the distributor valve connections.

AMERICAN ALL CHROME NICKEL STEEL CAR.

With a view to bringing the selling price of a car designed along the best approved lines and embodying the best of materials, down to a fair level, J. M. Ellsworth, 518-520 West Twenty-second street, New York City, has installed a special plant at this address and will exhibit his first cars at the Grand Central Palace show this month. A larger plant is to be established outside of New York City for the manufacture of cars, while the New York shop will be devoted to the production of replacement parts in alloy steels—a special service of great value to makers, garagemen and owners, which has been developed by Mr. Ellsworth's chief engineer, Thomas J. Fay.

It is claimed by Mr. Fay that parts can be produced in chrome nickel steel at about the same cost as for carbon steel under suitable conditions, and he has under him a skilled staff of machinists who have been trained to this work. Owners of foreign cars can thus have parts of the same materials replaced in a fraction of the time, as well as with a saving in expense.

ANNOUNCEMENT FROM THE HOL-TAN COMPANY.

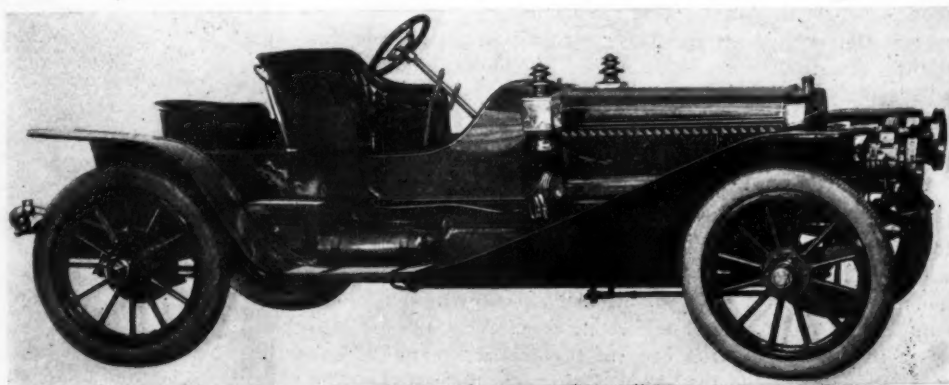
It is definitely known that the Hol-Tan Company, of New York City, will shortly make an important announcement in reference to its future program. While this concern has handled the Fiat car in this country, it is understood that it will have extensive territory in the East for a well-known American make of car. Naturally President C. H. Tangeman and Vice-president Harry Fosdick were much elated at the Fiat victory in the 24-hour Morris Park race, but it is known that for some time they have had plans which embrace the handling of a high-priced American car, even though responsible for the success of the Fiat.

ADAMS GARAGE AT ROCHESTER BURNED.

ROCHESTER, Sept. 30.—While William Adams was preparing to take a car out to run to Brockport, where his brother was stranded, the wiring became short-circuited in some manner and set fire to it. The building, situated at 485 Lake avenue, was completely destroyed, together with adjoining property and five cars. In attempting to run the blazing car out of the garage it stuck in the doorway and young Adams was severely burned. Frank Adams, the proprietor of the garage, recently installed \$2,000 worth of machinery, so that this loss will reach \$4,000.

NEW WINTON SIX-TEEN-SIX ROADSTER.

It was a foregone conclusion that the builders of the Winton, while announcing their intention of adhering strictly to one type of car for the season of 1908, would bring out a runabout body on the same chassis, and some idea of the result of their efforts in this direction may be obtained from the accompanying illustration of the new car. Except for the body, this newcomer is an exact duplicate of the Winton six-cylinder chassis.



LATEST ADDITION TO THE RANKS OF THE HIGH POWERED, SIX-CYLINDER ROADSTERS.

BRIEF ITEMS OF NEWS AND TRADE MISCELLANY

Many guesses have been hazarded as to the signification of the odd title of the latest Winton, the Six-Teen-Six. Its aptness is to be found in the fact that it is the sixteenth Winton model and has six cylinders.

Heald Machine Company, Worcester, Mass., makers of the Heald ring and cylinder grinders, have just completed two large additions to their plant, 150x90 and 30x45, giving the concern 28,000 square feet floor space.

James M. Sholl, recently appointed receiver for the St. Louis Motor Car Company, Peoria, Ill., has been elected trustee in bankruptcy of the concern and will manage its affairs until finally wound up.

Having tested out the Truffault-Hartford suspension to their entire satisfaction, the Nordyke & Marmon Company, Indianapolis, Ind., have decided to equip their entire output of Marmon cars with these shock-absorbers during 1908.

All rights and patents covering the Rutenber carburetor have recently been acquired by the Western Motor Works, Logansport, Ind. The latter concern is well known as the manufacturer of the Rutenber motors, and will now make the carburetor of the same name as well.

Upon the return of R. E. Olds, president of the Reo Motor Car Company, Lansing, Mich., from abroad, the directors voted every employee in the plant a bonus of 5 per cent. on his annual salary in recognition of faithful service. The gratuity affected 900 people.

The Standard Roller Bearing Company, Philadelphia, Pa., has just increased its capital from \$3,500,000 to \$5,000,000, and large additions are now being made to the plant and equipment for the purpose of enlarging the company's department for the manufacture of roller bearings.

A meeting of the creditors of the defunct Deere-Clark Motor Car Company, of East Moline, Ill., has been called for October 5, and will be held in Rock Island, Ill., at the office of the referee in bankruptcy, Adair Pleasants. The liabilities are \$100,000, and the nominal assets \$125,000.

Due to the recent sale of his personal holdings in the Angier Automobile Supply Company, the Motor Mart, 222 Eliot street, Boston, Mass., by Mr. Angier, the impression has gone abroad that the Angier Company, 735 Boylston street, Boston, and its branch at 9-11 Dorrance street, Providence, R. I., had sold out. Except for certain contract relations still extant, there is no connection between the two companies.

Since the establishment of the American Michelin Company's factory at Milltown, N. J., many visitors have been desirous of going through it, but the same rigid policy which has been adhered to abroad has been adopted here. When on tour the Queen of Italy visited one of the Michelin factories, but neither her rank nor a special telegram to Eduard Michelin at Clermont-Ferrand sufficed to disturb the precedent.

The Warner Instrument Company, Beloit, Wis., has just closed a contract with the Electric and Ordinance Accessories Company, Ltd., Birmingham, England,

one of the largest English companies making electrical instruments of precision, to manufacture the Warner Autometer on a royalty basis. This concern is controlled by Vickers Sons & Maxim, and is said to have the finest equipment of automatic machinery in Great Britain. It was about to undertake the manufacture of a centrifugal type of instrument, but abandoned it in favor of the magnetic principle of the Warner, and will popularize the latter on the other side.

Through the efforts of the Premier Motor Manufacturing Company and the Gibson Automobile Company, the children of the Indianapolis orphan asylums were treated to their annual automobile outing last week. There were twenty-one Premier cars in line, including some loaned for the occasion by private owners, and they accommodated seventy-six of the youngsters, many of whom were then given their first view of Indianapolis outside the asylum walls. The procession started west on Washington street, continuing out the beautiful Capitol avenue boulevard, and across to Riverside Park, where the children were given an opportunity to enjoy themselves. Some of the children would have put A. A. A. tourists to shame for real dust on the completion of their enjoyable trip.

NEW AGENCIES ESTABLISHED.

The Automobile Sales Corporation of New York, 1661 Broadway, has just taken the distributing agency for the Panhard oils, Comstock shock absorber and the Webster gasoline gauge.

The Puritan acetylene gas tanks, made by the Old Colony Light Company, Boston, Mass., will be represented hereafter in New York State, New Jersey and Connecticut by the Pierson Motor Supply Company, of New York and Brooklyn.

Smith Brothers, Los Angeles, Cal., have been appointed agents for the Rainier cars for the Southern California territory, the contract having recently been closed by General Western Sales Manager Ezra E. Kirk, while in Los Angeles on a trip through the coast territory.

The H. H. Franklin Company, Syracuse, N. Y., now has five branch houses, three of which—Boston, Chicago and New York—have been opened during the past year. The New York branch, at Broadway and Seventy-third street, is in charge of Winfield S. Jewell, assisted by C. E. Apgar as salesman. A separate building has been leased at 211 West Eighty-seventh street and a complete repair shop installed.

The Warner Instrument Company, Beloit, Wis., has found it necessary to open independent branch offices in Michigan and Ohio in order to properly handle its autometer business in those States. O. C. Foster, who formerly covered this territory, has been assigned to Ohio, with headquarters at Cleveland, while George G. Weidner, one of the western representatives, will cover Michigan, his headquarters remaining at the old stand at 260 Jefferson avenue, Detroit.

R. M. Owen & Company have just completed negotiations for the handling of the Reo and Premier lines in Chicago, formerly taken care of by a branch house, with the Walden W. Shaw Com-

pany. The latter concern now has in process of erection a large modern building at the corner of Twenty-second street and Michigan avenue, and in addition to the Reo and Premier lines will still continue as western distributors of the Berliet. Mr. Herz, who has been identified with the Electric Vehicle Company for several years past, has become connected with the new Chicago agency.

The Oto Sales Company, manufacturers' agents, 2923 Olive street, St. Louis, has been formed by T. K. Shannon, formerly of the Behen-Faught Company, of that city, and Charles E. Halliwell, formerly St. Louis representative of the Warner autometer. Mr. Shannon is president and general manager and Mr. Halliwell is vice-president and secretary. The new company expects to conduct a manufacturers' agency of the first class, carrying no two lines that will conflict with each other, and will protect the firms with whom it does business in every way possible against losses.

PERSONAL TRADE MENTION.

Charles G. McCutcheon has just been elected vice-president of the American Distributing Company, Cleveland, O., and beginning October 1 will devote his attention to the selling end, probably taking the East as his territory.

Fred Titus, of cycle racing fame, who has acted as sales manager of the Harry S. Houpt Company, New York, agents for the Thomas cars, has just been appointed manager of the New Jersey branch recently opened by that firm in Newark.

Carl Page, for a number of years identified with the White interests in New York City, has taken the New Jersey and Connecticut agencies for the Peerless cars. At present Mr. Page is engaged in remodeling the selling forces of R. M. Owen & Company, agents for the Reo and Premier lines.

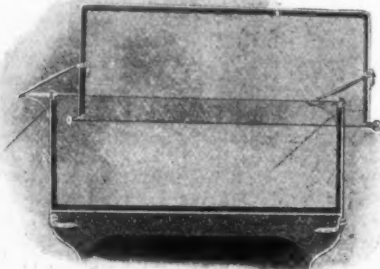
George H. Strout, sales manager of Apperson Brothers, Kokomo, Ind., left for a trip to the Pacific Coast on October 1 which will keep him in the far west for the next three weeks, during which time he will close arrangements now pending for the handling of the Apperson car in Los Angeles, San Francisco, Portland, Ore., Salt Lake City, Utah, and Seattle, Wash.

An addition to the executive officers of the E. R. Thomas Motor Company, Buffalo, N. Y., has just been made by the appointment of R. B. Jackson as general manager. Mr. Jackson received his technical training under some of the best known engineers in the country, and for the past few years has been associated as factory manager with some of the country's largest auto manufacturers.

Frank C. Riggs, up to a short time ago vice-president of the Fisk Rubber Company, Chicopee Falls, Mass., has joined the forces of the Packard Motor Car Company, Detroit, Mich., and took charge of the commercial vehicle and enclosed body departments on October 1. The company has been experimenting constantly for the past two years with motor trucks, and will now begin an active commercial vehicle campaign, the first cars being ready within the next few months.

INFORMATION FOR AUTO USERS.

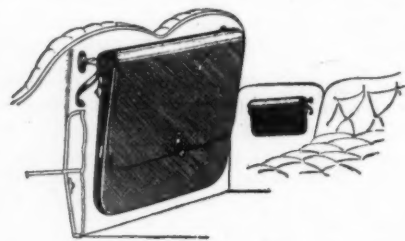
Common-Sense Auto Fronts.—Under this title Colonel Sprague, of automobile top fame, otherwise the Sprague Umbrella Company, Newark, O., has recently brought out a glass front of unique design. That it is a Sprague idea and



SPRAGUE'S NEW COMMON SENSE AUTO FRONT.

works in the Sprague way will probably be sufficient description for the many who are acquainted with the products of this firm in other lines. It is made of the best French plate glass, split horizontally in the center and enclosed in a neat and substantial brass frame, its chief feature of interest, however, lying in the simplicity and ease with which it may be manipulated. It locks in place by a simple and efficient device, and does not fold upside down as is usually the case. Instead of being hinged and folding over, it is only necessary to move the upper half of the frame to the right a short distance, after unlocking, and it drops into place, folded; while replacing it entails merely a reversal of this operation. It is simplicity itself, and cannot rattle in either position, while the quality of the material and workmanship employed insure its durability. It will make its debut at the coming Palace and Garden shows in New York this fall.

Security Apparel Holder.—As an addition to its line of automobile specialties, the Imperial Brass Manufacturing Company, 241-249 South Jefferson street, Chicago, has recently brought out a device termed the Security Robe and Ap-

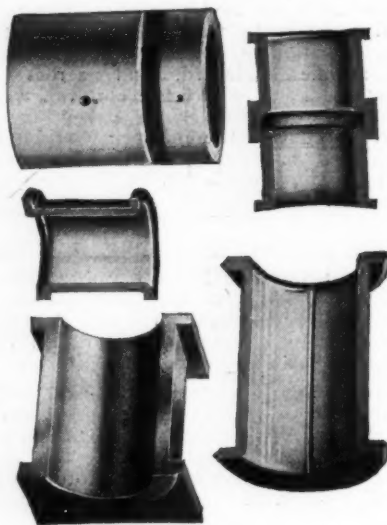


SECURITY APPAREL HOLDER IN PLACE.

parel Holder, designed to be attached to the rear panel of the front seats of the car for the convenient accommodation of robes, overcoats and the like, which are otherwise always in the way and encumber the tonneau. The holder consists of a horizontal collapsible frame work, to the outer rods of which is fastened the bag or receptacle. The side toggle arms of the framework are pivoted, and are fitted with lugs having elongated holes or slides in them. When opening, the mouth of the bag is swung to its full telescopic adjustment, and, the lugs on the toggle arms becoming engaged, bring

the center rod to a level with the opening of the bag. The frame is then pushed slightly backward, the lips on the toggle arms become engaged with the lugs of the main brackets by which the device is attached to the car, and the receptacle is thus rigidly held open, permitting the proper arrangement of its contents on the center rod. To close, the frame is pulled forward slightly, disengaging the lugs, and the mouth collapses, permitting the bag to close regardless of the amount of its contents, either operation naturally taking but a fraction of the time necessary to describe it. The metal work is of handsome design, highly finished, and includes a pair of grasp handles, one at each end.

Die-Cast Bearings.—Within the past few years the antiquated method of pouring babbitt or other alloy bearings has been superseded to a very large extent by the employment of special die-

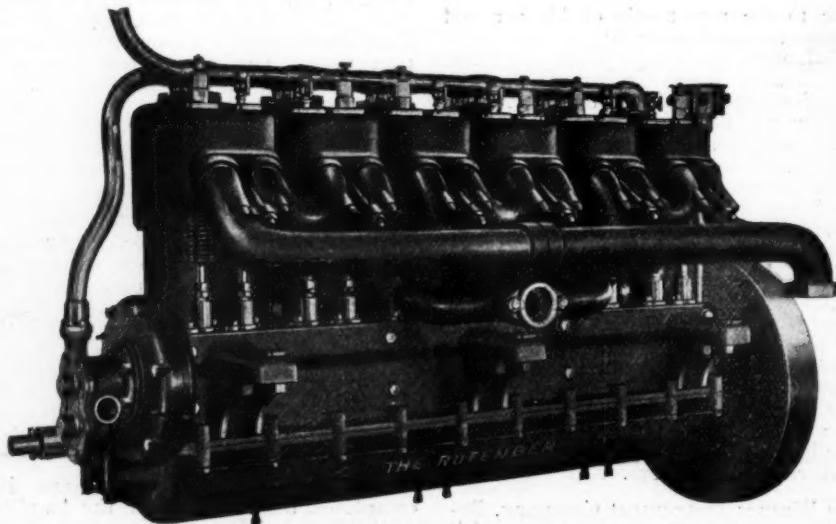


SPECIMENS OF AMERICAN DIE CASTINGS.

cast bearings possessing many advantages. The system has been developed very largely by the American Die Castings Company, 815 South Delaware street, Indianapolis, Ind., the successful production of this class of bearings by

this method being the result of a special process. The many claims of such bearings to superiority over the old forms will be obvious. They may be die-cast of all bearing metals accurate to .001 inch, are smooth and true, as if machine finished, and have the great advantage not only of being absolutely uniform mechanically, but the makers also guarantee them to always contain the same percentage of alloy as the metal furnished. The process is applicable to every form of plain bearing, whether of a simple or intricate nature, and the makers will furnish estimates on any class of work of this kind.

Rutenber Motors.—Under the title of Rutenber, Model U, the Western Motor Works, Logansport, Ind., has just placed on the market a new 40-horsepower model for 1908, which embodies numerous features of merit. The cylinders are cast separately, and their dimensions are 4 3-4-inch bore by 5-inch stroke, the motor developing its rated output at the moderate normal speed of 1,000 r.p.m., while its speed range is from about 150 to 1,500 r.p.m., developing an excellent torque at low speeds, which is a quality sought for in the up-to-date automobile motor. The valves are mechanically operated and are all placed on the same side, while the pump and timer are placed at the forward end of the motor, the former being located on a vertical standard and having all its moving parts securely encased, as is true of all the gearing. Quite a departure has been made in the magneto drive, which is taken directly from the crankshaft through spiral gears, instead of from the camshaft or an independent special shaft solely for this purpose, as is usually the case, thus eliminating this complication. Particular attention has been paid to the design of the valve-operating mechanism, and tests have shown it to be highly effective. With this addition the Rutenber line now includes motors ranging from 30 to 60 horsepower, three sizes being made in the four-cylinder type, 4 1-2 x 5; 4 3-4 x 5 and 5 x 5 inches bore and stroke, and 4 1-2 x 5 in the six-cylinder type. The plant of the Western Motor Company is now one of the largest in the country devoted exclusively to the manufacture of motors, every part entering into their construction being made in the firm's own factory. Its capacity has been largely increased during the past year or two in order to keep pace with the demand for Rutenber motors.



NEW SIX-CYLINDER 40-HORSEPOWER RUTENBER MOTOR, MODEL U.